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EDITORIAL.

WHILE the paper by Mr. Tsheppe, on another page, is a remarkably clear explanation of the modes of manufacturing the various pepsins found in the market, as well as of the essential differences between them, it fails, we think, to give a correct idea of the mode in which this element of gastric juice brings about the digestion of albuminoid substances. While the changes are of a nature which involves a re-arrangement of the molecules of the substances acted upon, and in this respect are more or less of a chemical nature, the pepsin does not act precisely like a chemical reagent of which a definite and determinable quantity must be present to produce a given result, but, like yeast in the process of fermentation, it acts by catalysis. It is doubtless true that by the process of manufacture the power of the pepsin to awaken this catalytic change may be more or less impaired, and it is likewise probable that by subdividing any specimen of good pepsin so that it may exert its action upon a greater mass of food, the digestive action may be more complete and rapid.

Another element of uncertainty which occurs in every case where an artificial digestive ferment is needed, no matter how good an article may be used, is the amount of efficient gastric juice that the stomach itself can provide.

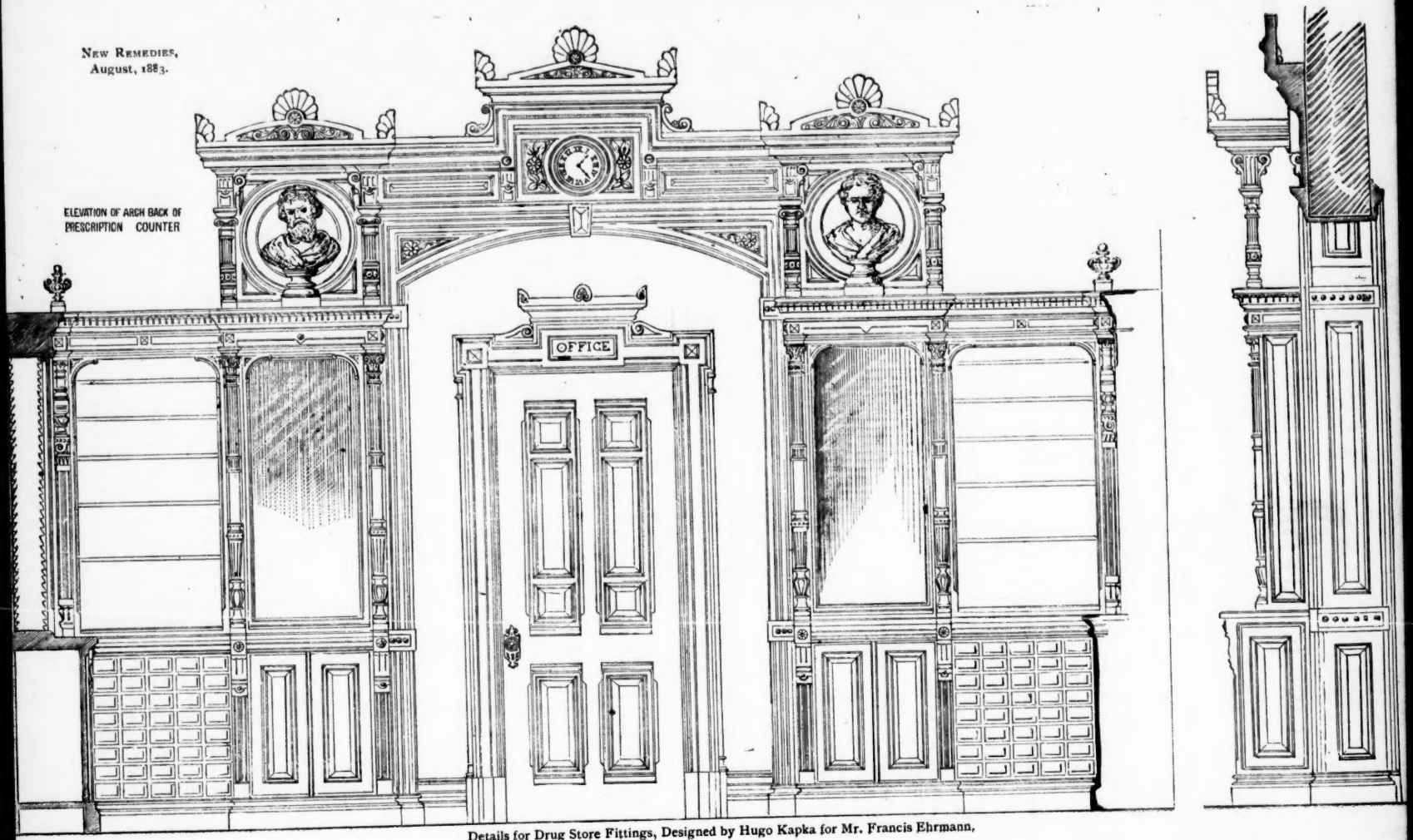
Still another fact exists, although it has apparently been lost sight of in practice, and is rarely or never mentioned by writers on disorders of disgestion, *viz.*, that much better results will follow the administration of the pepsin in divided doses during the process of digestion, and at intervals of a few minutes, than when it is given in one dose. The reason for this is the fact that as peptones are formed in the stomach they are absorbed or passed through the pylorus into the intestine, and carry with them a certain proporportion of the ferment which produces this change, and that in a case where the gastric juice is of notably poor quality, and artificial pepsin is employed, the digestive action, which at first may be quite efficient, grows weaker and weaker, and fresh supplies of pepsin are required from time to time to maintain the process and secure at least such a degree of digestion as shall not permit of its arrest after the food has escaped from the stomach into the intestine.

CONNECTED with this topic, and having some practical interest as related to the value of the gastric secretion of the pig, as taken at different times, is the method said to be employed by a well-known manufacturer of pepsin. It is well understood that the emotions awakened by the contemplation of appetizing food not only cause the saliva to flow—or make the "mouth water"—but they also stimulate a secretion of gastric juice. Taking advantage of this fact, fasting pigs are turned into a pen where a trough filled with hot mush is covered with a wire screen to prevent them from eating it and thus absorbing the pepsin contained in their peptic glands. They are then in due time killed, and the yield of pepsin is said to be greater than when no such physiological method of procedure is resorted to.

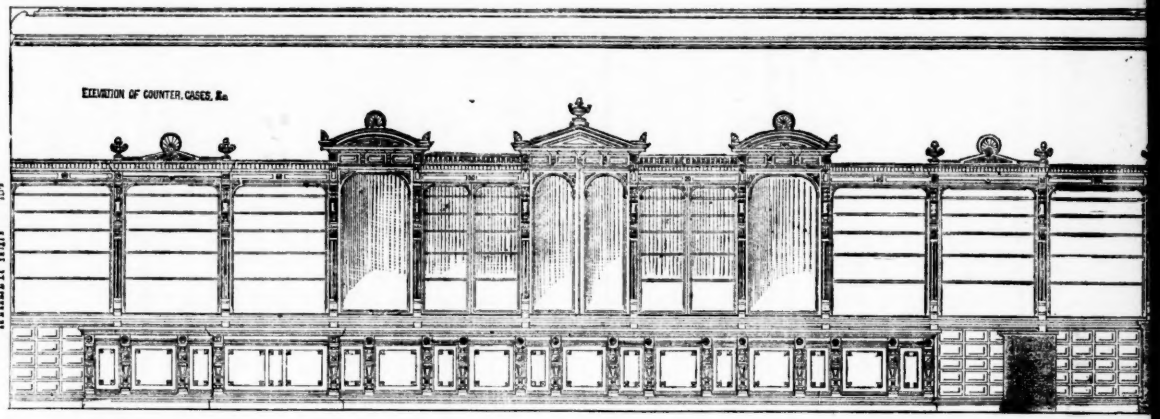
THE store which is illustrated in this number is the property of Mr. Francis Ehrmann, situated on the south-eastern corner of Fourth avenue and East Sixty-first street, in this city. A peculiarity of the store, not shown in the photograph, is a large, corner bay-window, in which the camera was placed and which enabled us to secure a picture embracing so large an area. In this "bay" is an aquarium and fountain, which, with a novel arrangement of beautiful show bottles of cut glass, and gilt gas-fixtures, make one of the most attractive windows that we have yet seen.

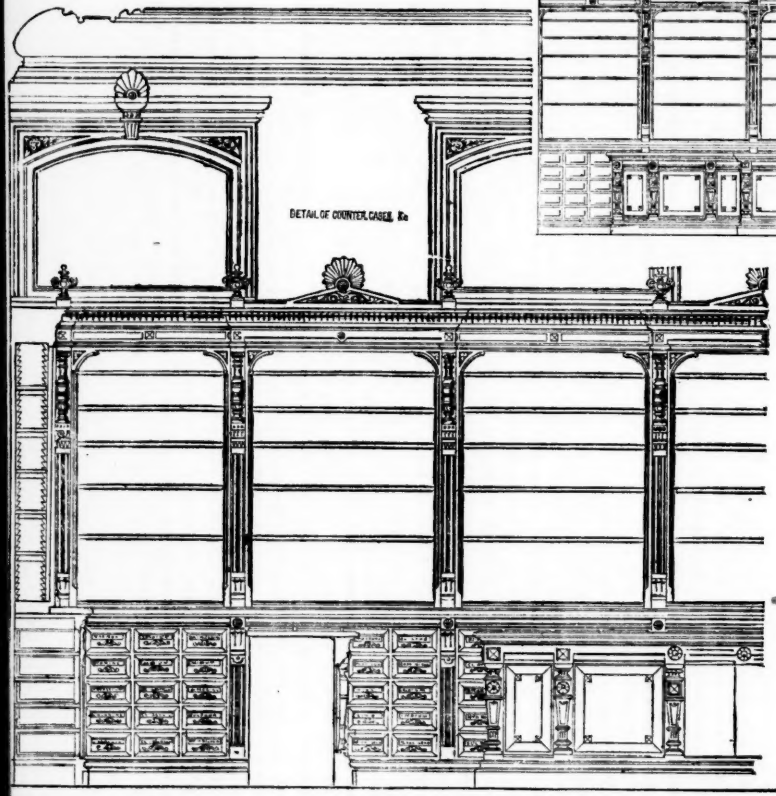
In the rear of the prescription counter an arch-way gives access to a small prescription laboratory, provided with water, sink, racks for glassware, and cases for packages of goods which would be unsightly if placed in the cases of the store. Opening into this laboratory, opposite to the window, are a closet, and a dumb-waiter and stair-case communicating with the basement, and opposite the arch-way is a door leading to the proprietor's private office. The latter is free from details of the "shop," and serves for study, confidential business, or rest. Descending the stair-case leading from the prescription laboratory to the basement, one sees, when part of the way down, the opening through which ice is put into the ice-space of a large

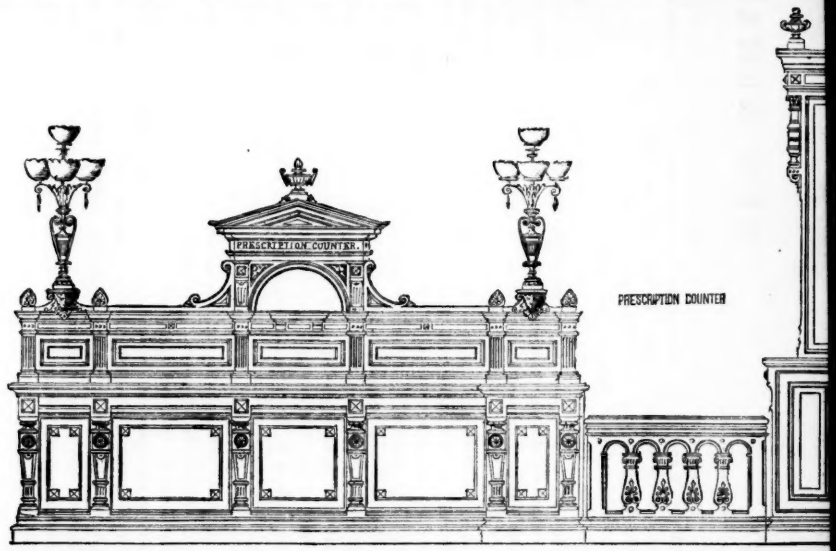
ELEVATION OF ARCH BACK OF
PRESCRIPTION COUNTER



Details for Drug Store Fittings, Designed by Hugo Kapka for Mr. Francis Ehrmann.







Details for Drug Store Fittings, Designed by Hugo Kapka for Mr. Francis Ehrmann.

refrigerating room where emulsions, syrups, ethereal preparations, and similar articles are kept at a low temperature, until wanted for use. To save time in looking for the things kept in the cold-room, an inventory of its contents and their location, written on a card, is hung on the door. Passing now to the front of the basement, one sees the furnace used for warming the store above, and ranged around it the racks for storage of bottles and prescription vials. Opposite the furnace and an opening through the foundation wall admits one to the vault under the sidewalk, where a sink is located. Here are also shelves for storing tin percolators, and similar bulky apparatus, and the sink serves for washing bottles and emptying slops of all kinds, while about it are arranged the various utensils which such work requires. The roof of the vault is made of glass bulls-eyes, mounted in iron, to admit light during day-time, and a gas-burner, placed out of harm's way, serves to light the vault and basement at night. Against the walls of the basement are bins for storing a full line of mineral waters, and at the front of the room, adjoining the basement entrance from the street, and just beneath the counter apparatus in the store, are the steel fountains holding carbonated beverages. Returning to the rear of the basement, one sees in the wall two doors, one leading back to the stair-case, the other, nearest the street, admitting to the pharmaceutical laboratory proper. Here, on a counter built against the outer wall, and lighted through windows above, are arrangements for all descriptions of pharmaceutical work. Between this laboratary and the passageway to the stair-case is a vault, opening into the laboratory, in which are kept, in suitable bins, a stock of wines, liquors, and expensive alkaloids, as well as ether and similarly inflammable goods.

Returning to the store and passing through the private office and across the hallway connecting the apartments in the upper stories with the street, one enters a small room, lighted from the street, in which are kept the reserve stock of miscellaneous surgical dressings, toilet appliances, infant foods, and odds-and-ends of all sorts which consume space and for which room cannot be well found under the cases and counters of the store.

Returning to the store, one is again impressed, as he was sure to be on entering it from the street, with the richness of the mahogany woodwork, the details of which, owing to the kindness of Mr. Kapka, the architect (who, by the way, has designed a number of beautiful interiors of this kind), we have been able to illustrate on the preceding pages. There is no attempt at effects in color, the ceiling even being in light, warm tints, with the least possible decoration, but the impression is one of beauty in design, solidity of construction, and adaptation to the purposes of the establishment. The floor is of marble tiling. The counter apparatus for carbonated waters is of dark marble with silver-plated trimmings, by Matthews. The chairs intended for the comfort of customers are easy and substantial, and the alcove with the fountain-aquarium and a few growing plants form an attractive resort for those who await the preparation of a prescription.

As is evident in the picture, no attempt was made to "tidy up" for effect, but the store was allowed to maintain its every-day appearance. Indeed, the continued presence of the prescription clerk at his work led to a blemish in the negative, which the process used for making the illustration has not removed.

THE *Philadelphia Medical Times*, of July 14th, publishes the following letter from a correspondent in Pittsburg, which is being copied by the daily papers for the edification of the general public; the general impression conveyed being, that everybody should use great circumspection in partaking of carbonated beverages. There is no reason for presuming that such water as is here described is sold by any considerable number of men, but so long as any one does vend such poisonous stuff, the whole business will suffer. The editor of the Philadelphia journal publishes the letter without comment, and it does not appear to either himself or the writer of the article that such a case may be exceptional, or that many more reputable and careful vendors of carbonated drinks are likely to be the sufferers from the prejudices that such an article will awaken, rather than the few unprincipled or ignorant men who should bear the blame.

"The other day I walked into a drug store in Pittsburg, and was soon engaged in a conversation with the druggist. 'My soda water has a strange taste,' observed the pharmacopolist. He drew a little of the water, and I tasted it. I then requested him to put up half a pint of it in a clean bottle, and told him that I would take it to my laboratory and examine it. This I have done; and I find the water to be dangerously impregnated with copper—in proof of which I inclose a small piece of iron heavily coated with *metallic copper*, which coating was derived from only *two fluidounces* of the soda water. The copper no doubt existed in this water as carbonate of copper, held in solution by excess of carbonic acid, and was doubtless derived from the saturators, which are in all cases made of that metal, and, I believe, generally coated inside with tin. By and by, however, the *tin* gets dissolved (as carbonate held in solution in excess of carbonic acid), and *then* (if not before), the copper is exposed. I say nothing about tin here, as I have not examined for it. It has frequently occurred to me that in every large city there should be a public analyst, whose business it would be to examine solids and liquids used as foods, in the interests of public health. But why do I make such a suggestion? To judge from other appointments, the situation would be given to some political bummer, some cheap incompetent, some school-boy fresh from some miserable college, some pedagogue mouthing chemistry from a book, some donkey compared with which Balaam's was an ass of genius, some old soldier with a wooden arm or perhaps with even a wooden head, or something else equally ridiculous."

Estimation of Lactic Acid.

A MIXTURE of 1 part of solution of subacetate of lead with 4 to 5 parts of spirit of ammmonia, with the precaution that the mixture acquires at most an opalescence produces with lactic acid an amorphous, white precipitate of lactate of lead, which can be washed with alcohol, and, on drying, yields transparent, dextrin-like pieces, having the composition $3PbO.2C_3H_6O_3$, which contains 78.7% of oxide of lead.—*Zeitschr. f. Anal. Chem.*, 22, 223.

[ORIGINAL COMMUNICATION.]

On the Constituents of Andromeda Japonica Thunb.*

BY PROF J. F. EYKMAN, OF TOKIO, JAPAN.

IN my preliminary notice on *Asebotoxin* (in *Nieuw Tijdschrift voor d. Pharmacie*, Oct., 1882), I mentioned a yellow substance which was partly taken up by ether, after the syrupy, aqueous infusion had been shaken with chloroform in order to obtain the asebotoxin. This yellow substance I obtained in large quantity from a separate portion of dried leaves. By percolation with alcohol, an extract was prepared which was exhausted with absolute alcohol, and the alcoholic solution was then mixed with twice its volume of ether. Both the absolute alcohol and the last-mentioned treatment separated a thick, reddish-brown mass (see below).

The solution was deprived of alcohol and ether by suitable distillation. There remained a syrupy, brownish-red mass which gradually separated into an upper, dark, reddish-brown, syrupy layer, and into a lower, denser one, of brownish-yellow color. By fractional extraction with cold alcohol, there was finally left a large quantity of a lemon-yellow powder which was recrystallized from hot, diluted alcohol. By repeated fractional solution in, and recrystallization from, diluted alcohol, two portions of different properties were thus obtained which, on further investigation, turned out to be quercetin and a body resembling quercitrin.

A. Asebo-Quercetin. Small, yellow needles, almost insoluble in boiling and in cold water, difficultly soluble in ether, easily in hot diluted alcohol. Easily soluble in alkalies, with deep-yellow color. This solution yields a copious, gelatinous precipitate, when acidulated with diluted sulphuric acid and, on the subsequent addition of sodium-amalgam, produces the fine paracarthamin-reaction (of Stein),† which appears, however, intensely only after warming. The diluted alcoholic solution is colored green by ferric chloride, and the latter reagent also precipitates it completely. Concentrated sulphuric acid and hydrochloric acid color it deep orange-yellow. Ammoniacal solution of nitrate of silver, as well as warming with alkaline solution of copper, produce a copious reduction.

Elementary analyses were made of the substance dried at 120°–125°, at which temperature it lost 9–10 per cent of water. The below-quoted analyses were made with separately prepared and purified samples:

Gm. of substance yielded	Water (H_2O)	and Carbonic acid (CO_2).
1. 0.4114	0.1261	0.8989
2. 0.4001	0.1229	——— §
3. 0.3754	0.1140	0.8176

Or, in percentages:

	I.	II.	III.	Mean.	Theory, for Quercetin.‖
C = 12	59.6	—	59.4	59.5	60.
H = 1	3.4	3.41	3.37	3.39	3.33
O = 16	37.4		37.23	37.11	36.66

B. Substance resembling Quercitrin. This exhibited properties in many respects agreeing with those of quercitrin. But it differed by its more feeble power of reducing alkaline copper solution, by its more ready solubility in water, by the non-appearance of a precipitate on acidulating the solution, and by the appearance of the parcarthamin-reaction without warming.

On analyzing the substance, dried at 120°–125° (but probably not yet completely purified), the following values were obtained:

Gm. of substance yielded	Water, and (H_2O)	Carbonic acid. (CO_2)
1. 0.4558	0.1801	0.9148
2. 0.4469	0.1721	0.8951
3. 0.3997	0.1566	0.8020

Or, in percentages:

	I.	II.	III.	Mean.
C = 12	54.73	54.6	54.7	54.7
H = 1	4.38	4.28	4.35	4.34
O = 16	40.89	41.12	40.95	49.96

On comparing this with the various formulæ assigned to quercitrin:*

		%C	%H	%O
1.	$C_{15}H_{14}O_8$	55.9	4.35	39.75
2.	$C_{33}H_{36}O_{17}$	56.7	4.3	39.0
3.	$C_{26}H_{38}O_{30}$	53.4	4.8	41.8

it will be seen that the latter differ considerably from the above. This might be explained by the presence, in the new substance, of a quantity of quercetin. Indeed, by further recrystallizations, I succeeded in separating a portion having the properties of asebo-quercetin.

Of the substance thus purified, I have made no analysis, because I did not possess a sufficient quantity. This also prevented me from making experiments on the splitting of quercetin and isodulcit. The purified substance exhibited the following properties:

Pale-yellow needles, difficultly soluble in boiling water, easily so in hot, diluted alcohol. Soluble in alkalies with deep yellow color. The aqueous as well as the diluted alcoholic solution yields an *orange-yellow* precipitate with acetate of lead, and a green color with ferric chloride. Ammoniacal solution of silver is strongly reduced, but ammoniacal solution of copper only *slowly on boiling*. The alkaline solution, when acidulated with diluted sulphuric acid, yields no precipitate. The acidulated solution when shaken with sodium amalgam, produces an intense paracarthamin reaction *without warming*. Both in the case of asebo-quercetin, and in that of the substance resembling quercitrin, the red color produced by sodium amalgam is changed to green by alkalies. Both also are colored green if sodium amalgam is added to their alcoholic solutions.

The reddish-brown mass remaining behind after treating the alcoholic extract with absolute alcohol, was soluble to a nearly clear solution in a small quantity of water; but, on addition of much water, a light, reddish-brown precipitate separated. This was allowed to settle, then removed by filtration, and repeatedly purified by solution in a little alcohol and precipitation with ether or water. To eliminate traces of inorganic substances still present, a portion was again dissolved in alcohol, and precipated from the filtered solution by hydrochloric acid. This substance, —*asebofuscin*—when exposed, while moist, to a temperature of 100°, dries up to a dark, brownish-black, resinous mass. When air-dry, this forms a light-brown powder, which may be dried above 100° C. without fusing together to a resinous mass. It is insoluble in water, easily soluble in alcohol with adeep brown color, insoluble in ether and chloroform and boiling benzol, and very little soluble in amylic alcohol. It dissolves easily in alkalies with a dark, brownish-yellow color. When warmed with alkaline copper solution, or with ammoniacal silver solution, it does not produce a plainly visible reduction, but the solution acquires a dark color. The alcoholic solution diluted with water assumes a darker greenish-brown color by ferric chloride. Acetate of lead or ammoniacal solution of chloride of calcium produces a dirty, brownish precipitate. Chloride of gold yields a dark, purplish-violet precipitate. Sodium amalgam produces neither a red color in acid, nor a green color in alkaline solution.

Elementary analyses of the substance dried at 115°–120° yielded:

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* Continued from vol. xi., 290, and vol. xii., 66.

† Stein's paracarthamin is a green substance, produced by acting upon an acid solution of quercetin with sodium-amalgam, and then adding an alkali.

§ The carbonic acid, in this experiment, could not be determined, owing to an accident.

‖ Calculated for Liebermann's formula of quercetin: $C_{24}H_{28}O_{14}$.

* 1. Dragendorff, in *Qual. und Quant. Analyse von Pflanzen, etc.*

2. Hlasiwetz and Pfaundler; Kawalier and Rochleder.

3. Lieberman and Hamburger.

Gm. of Substance.	Water, and (H_2O)	Carbonic Acid. (CO_2)
1. 0.3956	0.1756	0.8625
2. 0.4085	0.1831	0.8978

Or, in percentages:

	I.	II.	Mean.	Calculated for $C_{18}H_{18}O_8$
C = 12	59.5	59.9	59.7	59.67
H = 1	4.93	4.95	4.94	4.97
O = 16	35.57	35.15	35.36	35.36

On passing hydrochloric acid gas into the alcoholic solution of asebofuscin, or on adding to it hydrochloric acid and warming, it assumes a handsome, intensely reddish-brown color. From this solution, water separates a dark-brown precipitate, which I shall term *asebo-purpurin*. On drying, this appears as a dark, blackish-violet powder which is insoluble in water, easily soluble in alcohol with a deep wine-red color, and also in solution of potassa, with a magnificent and intensely green color. Acetate of lead added to the alcoholic solution diluted with water, produces a greenish precipitate, ferric chloride a dirty brown color. Sodium amalgam does not change the color of the acid solution.

Elementary analyses of the substance dried at 140°–160° yielded:

Gm. of substance.	Water (H_2O).	Carbonic acid (CO_2).
1. 0.3862	0.1615	0.9082
2. 0.3303	0.1436	0.7696

Or, in percentages:

	I.	II.	Mean.
C = 12	64.1	63.8	63.95
H = 1	4.64	4.83	4.73
O = 16	31.26	31.37	31.32

It is remarkable that asebo-purpurin, when moist, has a color resembling that produced from quercetin and quercitrin by sodium-amalgam; yet, while both of the latter, after having been treated with sodium-amalgam, are rendered green by alkalies, the asebo-fuscin, from which the asebo-purpurin is produced, neither shows the quercetin reaction, nor becomes green with alkalies. This behavior, perhaps, suggests a simple genetic relation of these constituents, since asebotoxin, when warmed with alcoholic solution of hydrochloric acid, also produces a fine, dark-violet color, which is, however, not rendered green by alkalies.

Of *asebotin* and *asebogenin** it may yet be stated that they do not reduce ammoniacal solution of silver, and do not exhibit (just like asebotoxin) the paracarthamin-reaction either in alkaline or in acid solution.

From the abstract of a paper by Prof. Plugge, which abstract appeared in this journal (vol. xii., p. 66), it would appear that this author claims the priority for the investigation of the constituents of Andromeda japonica. As this question cannot interest your readers, I shall only refer here to a paper relating to this subject which I have sent to the *Nieuw Tijdschrift v. d. Pharmacie*. This only I will mention here that the plant in question, on account of its well-known poisonous character, has long attracted the attention of foreigners as well as natives. It has been submitted to an examination in this laboratory already in the beginning of 1875, long before Prof. Plugge's residence in the country (end of 1876–1878).

Regarding some of the statements made by Prof. Plugge, I must say that I found no difficulty in shaking with chloroform, while operating on five to seven litres of the concentrated and filtered infusion. The name *asebotoxin* was chosen by me on the analogy of the Japanese *asebo-doku* (= "asebo-poison"), long in use here. In my original paper I used the expression "glucosid-achtig," which by an oversight was translated by "glucoside" (N. R., xi., 290), instead of "resembling a glucoside." Finally, the substance named by Prof. Plugge "andromedo-rubrine" is undoubtedly a mixture of several other constituents, at least of those two which I described as *asebo-quercetin* and *asebofuscin*.

TOKIO, April 21st, 1883.

* NEW REMEDIES, xii., 66.

Some Facts Concerning Filtration.*

BY CHARLES SYMES.

TEXT-BOOKS tell us at the outset that it is very necessary to use a funnel, the sides of which form an angle of 60°, this being the angle formed by the folded paper. Now I take exception to this very exacting requirement. We do not get our straining bags or percolators made of such a shape, and that because our experience teaches us how much more suitable is a form in which the angle is decidedly more acute, the same volume of liquid in this latter form producing a longer column, and consequently a greater downward pressure. Then, as to the paper fitting the funnel, we know quite well that all else being equal, the less perfectly it fits, the more rapidly filtration proceeds, so that, for any useful purpose, it is quite unnecessary to insist on this very orthodox shape. One has, say, a pint of fluid to filter, and for this purpose a funnel of about 8 ozs. or 10 ozs. capacity is taken. I would use one of the long French pattern, fold the filter in plaits, and before opening it out, place it fairly well down in its position in the funnel, or, if there were reasons for not plaiting the filter, then it should be folded first in half, and then the two outer portions, representing rather more than one-eighth each of the entire paper, should be turned back so as to overlap each other slightly at the top, and not to form a very acute point. In either case, the paper, whilst being fairly well supported, would have comparatively little surface adhesion, and but small resistance would be offered to the passage of the fluid in any part. Funnels of this shape, in much larger sizes, can be used with advantage, but it is then desirable to have them ribbed. The ribs of funnels, (especially of large ones) to be of any real value, should be much deeper than they usually are, and should not run vertically, but spirally. A piece of muslin placed between the paper and funnel not only strengthens and supports the paper, but assists filtration by preventing adhesion; a cone formed of coarse hair cloth is still better. For larger sizes, say of from four to eight pints, it is advantageous to dispense with the funnel altogether, and to use an inverted cone formed of linen or stout calico, the edges being fastened to a wooden hoop, which, resting on a deep earthenware pan, forms an efficient support for the paper, the liquid passing through with equal facility over the entire surface, a suitable cover placed over it excluding the air, and the process goes on under comparatively satisfactory conditions. A self-feeding arrangement can be fitted to this if it be so desired, in a very simple manner.

When, by exhausting the receiver, atmospheric pressure is brought to bear on the liquid in a funnel, then the latter should be of the *orthodox* shape, as with it air is less likely to pass; but this requirement militates against the advantage that such a method would otherwise possess. The point of the filter should be supported by a cone of platinum, or zinc, or by a packing of tow or prepared wool.

English paper-makers do not appear to have devoted much attention to the production of filters in any variety, and for this reason we derive our supplies chiefly from the continent. It is a well-known fact that holding almost any of the common filters up before a strong light they are seen to be perforated more or less with minute pinholes, so that, when in use, it is only after these have become filled up that the whole of the solid matter is separated, and the liquid passes through bright. Each time a fresh portion of liquid is added the disturbance caused thereby is liable to remove some of the particles which are acting as a filling, and if this occurs, filtration again becomes imperfect. These filters, although very cheap, do not pay to use if time and convenience are taken into consideration. There is, however, considerable difference in the efficiency of the various kinds of filtering papers, even when free from this defect. The presence of animal matter, as in the gray filter, increases the strength, but dimin-

* Abstract from a paper read before the Liverpool Chemists' Association, and published in *Pharm. Journ. & Trans.*

ishes its working capabilities, and the existence of mineral matters therein does the latter, but not the former. The papers specially prepared by Messrs. Schleicher & Schüll are practically free from all extraneous matters, the pulp having been treated with hydrochloric and hydrofluoric acids, etc. They are an example of what can be accomplished in this respect, but at the same time they are too expensive for general pharmaceutical purposes, and, indeed, are only made in comparatively small sizes, suitable for analytical work. For operations requiring filters of seven inches diameter (before folding), the Rhenish papers, No. 595, are, in my opinion, the most suitable; for larger sizes, the French stout plaited or plain papers, taken in all their qualities, give the best results. The French also make a paper specially suitable for syrups, thick, to support the weight, and yet sufficiently pervious to allow of fairly rapid filtration. I find, however, in very large sizes, a double sheet of Rhenish paper in an inverted case of linen, as already described, answers even better.

Some fabrics, such as swansdown, close-textured twilled calico, etc., filter as brightly as paper does, and may be used for that purpose as distinct from ordinary straining, provided the solid particles separate from the liquid in which they are suspended with ease, but when this is not the case, they are of much less value; indeed, with paper as a medium, slimy deposits present considerable difficulty. Pepsin wine, prepared from the fresh, undried pepsin, might be regarded as typical of this class of liquids, the tendency being to choke up the pores of the filter almost immediately the operation commences. In such cases, some kind of coarse straining material placed within the paper cone helps materially to obviate the difficulty. Hair cloth and thin, coarse flannel answer well for this purpose; they operate by collecting on their rough projecting surfaces the larger proportion of the undissolved slimy matter, without becoming sufficiently choked up to materially impede the progress of the operation.

Succus taraxaci, as expressed from the root and mixed with spirit according to the B. P. instructions, is typical of a class containing a large quantity of starchy matter and where subsidence in a closed vessel previous to filtration is of great service. The liquor from poppy capsules, in the process of preparing syrupus papaveris alb., furnishes us with an example of a liquid containing a large quantity of albuminous matter and mucilage which, when coagulated by spirit, has to be filtered off, and here again subsidence in a closed vessel helps the separation materially. The greater portion of the liquor can, after a time, be poured almost bright into the filter, and the remaining soft mass can, with care, be slowly pressed almost dry, the chief difficulty in the latter operation being to press sufficiently slowly to separate the liquid from the solid, and yet not to expose it to the air long enough to lose much spirit by evaporation, as in that case some of the solid portion would be again taken up in imperfect solution.

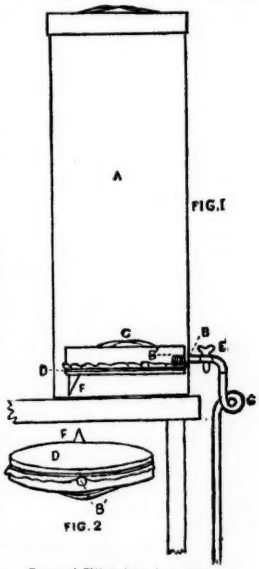
For removing suspended particles from strong acids, spun glass, know as "glass wool," answers best, but this might be regarded as straining rather than filtration. With ordinary liquids, when there is but little insoluble matter, absorbent cotton not only strains, but by fairly tight packing, filters brightly. In cases where it is desired to save the deposit, and possibly to dry or incinerate it, asbestos paper can be recommended; the liquid passes through it slowly, but it is very strong, and it is indestructible by heat. Paper lint, as introduced from America some few years ago, answered well as a filtering medium, being both strong and absorbent, but I am not certain whether its manufacture has been continued.

So far we have considered filtration as conducted only in funnels or funnel-shaped arrangements, as the various forms in which atmospheric pressure is commonly employed are described in works which treat of such matters. They are chiefly those in which a long column of liquid is carried above the point of filtration, as in Mr. Proctor's arrangement, where exhaustion is obtained by means of a syringe underneath, or suction by means of a bent tube, as described by Mr. Schacht at the meeting of the Conference at Birmingham, in 1865. Recently there has been advertised a "Filtre Rapide," in which the filtering material is placed on a frame or support rising up within the cylinder and forming a space in the centre into which the filtered liquid flows laterally to a receiver below. It is a compact and ingenious arrangement, but I have not any experience from which to speak of its usefulness.

To my mind, upward filtration is the direction in which we should work, and from which we may expect the best results.

Some years ago Mr. William R. Warner, of Philadelphia, invented an oil filter on this principle, consisting of two vessels in superposition, measuring altogether about forty inches in height by ten inches in diameter, and which is said to be capable of filtering a barrel of oil per day. This, of course, would depend on the nature of the oil and the temperature at which it is used.

Recently I have devised a form of upward filter in one vessel only, and have added to it a suction tube. It occupies comparatively little space, is simple in construction, efficient in action, and can be made by any tinman at little cost.



Symes' Filtering Apparatus.

It consists of a plain tin cylindrical vessel (A) with a tap-hole (B) 1½ inches from the bottom; it is 22 inches high and 8 inches in diameter. A tin tray (C and Fig. 2), 7 inches in diameter, with a vertical rim 1 inch or 1¼ inches deep, has a hole (B′) in the rim, this and the hole near the bottom of the cylinder being fitted with a short female screw of the same pitch of thread. Over the tray the filtering material (D), (flannel, calico, paper supported by muslin, or any other material that may be suited to the liquid to be operated on) is tied securely; it is then inverted and placed in the cylinder so that the holes B and B′ are exactly opposite one another. A tap (E) with a bend at a right angle is screwed in so that it holds the two together and assists a short leg (F) in supporting the tray in position. To the end of the tap is attached an india-rubber tube turned on itself (G), or a long glass tube of similar construction (in fact, take a large safety funnel deprived of the thistle head), which can be attached by a short piece of rubber tube. It will be obvious that any communication between the tap and the contents of the vessel must be made through the filtering medium which covers the inverted tray, and that any deposition which takes place must be on the bottom of the vessel itself, or on the opposite side of the tray, but not on the filtering surface, and herein lie the special advantages of the filter I now introduce. The use of a long delivery tube is not new; it formed part of an oil filter patented by Mr. Britten, of Liverpool, some years before Mr. Schacht's application of it to his filter. Neither is upward filtration new, as already stated; but the combination of the two, and in this particular form, will, I believe, commend itself to any one who will give it a trial.

The dimensions given furnish a filter of about three gallons capacity, at a cost of some ten or twelve shillings.

To Administer Cod-Liver Oil, add to the dose thirty drops of sulphuric ether, and have both *cold*.

Phosphorus and a New Method of Exhibiting It in Pill Form.*

BY H. H. MILLHOUSE.

In choosing the above title as the subject of my dissertation, I would remind you that I am not the first who has been engaged in this field of inquiry. It is well known that many pharmacists have written much on this subject, and for that reason a new form of the administration of phosphorus is looked upon with suspicion, and often after a short time sinks into oblivion. My object is really to introduce to your notice an account of the experiments I have made, and of what appears to me to be a new form of exhibiting this remedial agent in solid, *i. e*, in pill form, which shall contain phosphorus in a free and unaltered state. I may preface my remarks by stating that the kind of phosphorus used was the one recognized in the British Pharmacopœia, *viz.*, the ordinary or vitreous variety.

The medicinal value of uncombined phosphorus is dependent upon it being exhibited in a free, unoxidized, and finely divided form, uniform in composition, easily and gradually assimilable, and mixed with ingredients which do not cause decomposition, do not derange the stomach of the patient, nor counteract the action of the phosphorus.

I commenced my experiments by preparing pills from the official formula for pilula phosphori (for which I will refer you to the "Additions to the British Pharmacopœia"). You will probably agree with me in saying that it is unsatisfactory. My reasons are briefly these: 1st, it is too hard and insoluble, for it has been known to pass through the body unchanged; 2d, the quantity of phosphorus per cent is too small, and consequently when other ingredients have to be added it makes the pills inconveniently large; 3d, being of light matertals, 3-grain pills (usual dose of phosphorus $\frac{1}{10}$ of a grain), are, when coated with an ethereal solution of such substances as tolu, sandarac, etc., sugar or chalk, too large. The recommendation to keep under water is both inconvenient and objectionable, the former, because when a quantity is to be weighed out great care has to be taken to squeeze out all the adherent moisture, which when soap, spirit or extracts are added, causes the mass to become too soft; the latter, because the amount of oxygen naturally taken up by water (4 per cent), might cause some oxidation of the phosphorus, and thus weaken the preparation. This, perhaps, might be rendered less objectionable if the vessel containing the mass were filled to the brim with well boiled and cold distilled water. No doubt other objections may be raised. The French Codex, and also the recently published Pharmacopœa Germanica (1882), give no formula for phosphorus pills. I then made some from the form of the last edition (1882) of the United States Pharmacopœia, which is as follows:—

Take of—

Phosphorus	1 grain.
Powdered althea	80 grains.
Acacia, in fine powder	20 "
Glycerin	40 "
Water	20 "
Purified chloroform	50 "
Balsam of tolu,	
Stronger ether (94 per cent)	q. s.

Dissolve the phosphorus in the chloroform; mix the powdered althea and acacia in a mortar; add the solution of phosphorus, then the glycerin and the water; make into a mass and divide into 100 pills. Coat with a solution of 1 part of balsam of tolu in 1 part of the stronger ether, and keep in a stoppered bottle. [The author fails to indicate why this process did not work in his hands, or what objections he has to it.]

Among other suggestions that I have found are the following: In a paper read at an evening meeting of the Pharmaceutical Society in 1873, A. W. Gerrard proposed the use of resin as a solvent. Tolu as a vehicle for pills was recommended by A. C. Abraham in 1874. W. H. Walling, in 1875, pointed out that cacao butter was a good solvent. Twenty-five grains of phosphorus were agitated with 300 grains of cacao butter until dissolved, and then 200 grains of powdered soap added and shaken until uniformly mixed, which gave a nice combination. W. B. Addington, in the same year, proposed incorporating a solution of phosphorus in carbon bisulphide with a suitable extract, continuing the trituration until the solvent had evaporated. Barnard Proctor recommended a similar formula in which the extract is replaced by soap, tragacanth, licorice powder and confection of roses. E. Lilly, in 1876, suggested fusing phosphorus under syrup, shaking well so as to finely divide it, then mixing the phosphorus thus divided with flour. Mandl employed the following formula:—

Take of—

Phosphorus	5 centigrams.
Carbon bisulphide	20 drops.
Almond oil	18 grams.
Carbonate of magnesium	q.s.

Make fifty pills and coat with gelatin.

Tavignot used a pill prepared from an oily solution alone, thus avoiding the objectionable ingredient unnecessarily employed in Mandl's formula.

Balsam of Peru, yellow and white wax, Canada balsam, silica, crumb of bread, boratartrate of sodium, resin, spermaceti, albumen, storax, suet, lard and phosphate of calcium, have also been from time to time recommended as excipients.

Personally my troubles with this preparation have been very great, especially when other things have to be added, and I imagined that a formula with a basis having qualities as above described would be a desideratum, so I began by looking up the literature of the subject with the foregoing result. I have tried a great many formulæ, and they have been prepared both in mass and divided into pills coated with different coatings.

I would specially direct your attention to the following, the latter of which I am given to understand is quite a new method for giving a satisfactory basis for the administration of phosphorus.

No. 1 consists of—

Phosphorus	5 grains.
Benzoated lard	250 "
Phosphate of calcium	205 "
Carbonate of calcium	20 "

Melt the lard by means of a water-bath, transfer to a strong stoppered and perfectly dry glass bottle made warm, add the phosphorus, shake until dissolved, then pour the solution upon the powders, previously well mixed and contained in a similar stoppered bottle, kept warm by standing in hot water, shaking briskly until the mass is thoroughly uniform in consistence. Each 3-grain pill contains $\frac{1}{12}$ of a grain of phosphorus in the free state.

No. 2 consists of—

Phosphorus	4 grains.
Powdered mastich	30 "
Paraffin wax	50 "
Vaseline	66 "
Kaolin	90 "

Melt the wax and vaseline together in a porcelain capsule by the heat of a water-bath, place them in a strong glass stoppered bottle, previously warmed by allowing it to stand in an oven or other warm place, add the phosphorus (care being taken that the mixture is not too hot, a temperature of 140° F. being quite sufficient to fuse the phosphorus), and shake briskly until cool; when quite cold rub carefully in a mortar with the kaolin and powdered mastich, previously well mixed, until a uniform mass is obtained. It should be kept in a covered pot.

The vaseline used in the foregoing formulæ was kept in

* Condensed from the abstract of the author's paper contained in the *Pharmac. Journal*, May 12th. The paper was read before the Chemists' Assistants' Association, March 28th, 1883.

an evaporating dish at a temperature a little above its melting point for twelve hours, in order to dissipate all traces of moisture.

These two formulæ, Nos. 1 and 2, I feel confident in strongly recommending, presenting, as they do to every pharmacist, a practical method of dispensing phosphorus in the free state. Both are easily prepared, and if ordinary care is exerted, the danger of oxidation of the phosphorus is reduced to a minimum. The masses are of a good consistence and easily rolled into pills which possess the advantage of being small in size (in No. 2, more especially, the ordinary dose of phosphorus, $\frac{1}{100}$ of a grain, being contained in a 2-grain pill, which, when coated with gelatin, is considerably smaller than a 2-grain B.P. quinine pill), and thus convenient to mix with other ingredients, are readily, but not too quickly disintegrated in the stomach; consequently the phosphorus is gradually absorbed into the system. Having taken several, I have experienced no unpleasant eructations, but a sensation (after a few hours have elapsed), of what the French would term *bien etre*, thus leading me to believe that the active ingredients of of the pills had been assimilated. I have used several different coatings (some specimens of the pills coated with them are upon the table), including sandarac varnish, gelatin, isinglass, French chalk, and a mixture of sugar, gelatin and gum acacia, dissolved in water; but as pill coating might be made the subject of a very useful and valuable paper by some one of our members, I will merely content myself with recording my preference for the latter for coating phosphorus pills, which is but a slight modification of a process recommended in a paper by Clay W. Holmes, and published in the *Pharmaceutical Journal*, Decembed 23d, 1882. It, however, requires a certain amount of practice before the operator is able to employ it satisfactorily.

Several of my pills were coated by placing one on either end of a piece of fine wire, bent in horse-shoe fashion, dipping them into the liquified coating solution, and hanging them on nails until the coating had firmly set. This, though a tedious process, is nevertheless a very good one, and more easily managed than the pin process advocated by Mr. Holmes.

Before coating with French chalk (pearl coating), these pills should be varnished with an absolute alcoholic solution of sandarac, or other suitable alcoholic solution, ether partially dissolving the basis employed in their preparation.

I should recommed the mass to be kept in a covered pot, in boluses of about two drachms each, wrapped in wax paper to exclude the air and prevent any consequent liability of the phosphorus becoming oxidized. The different masses I have prepared (and placed on the table) have all been kept several months without this precautionary measure having been taken and no deleterious effects have ensued.

I have mixed No. 2 mass with various ingredients, including the following; in each case satisfactory results have been obtained.

No. 3 contains in each pill:—

No. 2 mass	2 grains
(equivalent to $\frac{1}{50}$ of a grain of phosphorus)	
Sulphate of quinine	1 grain.

This requires no excipient and make a very nice and workable pill.

No. 4.

No. 2 mass	2 grains
Sulphate of quinine	1 grain
Reduced iron	2 grains.

With the addition of a small quantity of glycerin of tragacanth and balsam of Peru these make good and convenient sized pills.

By agitating a known quantity of the pill mass in a test tube containing water of slowly rising temperature it was ascertained that No. 1 mass softened at 86° F., became very soft at 95° F., and disintegrated at 104° F., while No. 2 mass exhibited the same appearance at the temperatures of 91°, 100°, and 106° F., respectively.

Burton's Filtering and Percolating Apparatus.

G. F. Burton, of Springfield, Ohio, is the inventor and manufacturer of an appliance shown in the adjoining illustration, to be used in connection with an ordinary funnel or percolator, designed to prevent loss by evaporation and the escape of odors, and to exclude dust and flies. It will also serve as an air-tight cover to a macerating or infusion vessel. The careful apothecary realizes that by the ordinary method of filtering and percolation he loses constantly by evaporation not only in alcohol, but often in the volatile portion of the drug; that to keep the filter or percolator supplied requires constant attention. If filled and left at night, in the morning the filtering paper will usually be dry and gummed, or the drug in the percolator be exposed to air. The store is often filled with odors from these drugs, not noticed by those accustomed to them, but exceedingly unpleasant to customers. These difficulties are entirely overcome by the use of this apparatus.

To use the apparatus, place the rubber stopper into the receiving bottle, and insert the funnel or percolator (previously packed). On this place the cover. Into a suitable discharge bottle containing the desired quantity of liquid, insert the cork with the rubber tube attached, closed by means of the pinch-cock. Secure this inverted, at a proper height, directly above the cover, and pass the rubber tube through it as far as is desirable, to permit the liquid to rise in the funnel or percolator. Press on the rubber of the cover to secure it firmly to the edge of the funnel or percolator. There should be a slight bend in the supply-pipe, otherwise it might draw the cover out of place; if too much, there will not be a free flow of liquid. Loosen the pinch-cock, when the liquid will flow until it reaches the end of the tube, and close it. Then no more will run until the liquid is low enough in the funnel or percolator to admit air, when more will flow as before. Should the quantity of liquid be small, or for any other reason it is not desired to use the supply vessel, insert the stopper in place of the tube.

When the liquid begins to drop from the percolator, if it is desired to set it aside for a given length of time to macerate, instead of closing the lower orifice with a cork

the flow may be stopped by closing the air-tube by means of the pinch-cock.

The funnel or percolator should not be larger than eight and one-half inches inches in diameter. With a funnel of this size or a little smaller, a seven-inch filtering rack and No. 33 paper can be used. Should if be desired to use vessels the full size of the cover, to secure it perfectly tight, it may be necessary to weight it down with sand or by filling it with water.

Artificial Cumarin.

CUMARIN is found in nature in several plants, as is well-known, and especially to a great extent in the well-known fruit of the *Dipterix odorata*, the Tonka bean; further, in the leaves of the *Liatris odoratissima*, growing in Virginia, Carolina, and Florida, called "deer tongue" in the American trade.* Small portions are also found in the much-liked woodruff (*Asperula odorata*), the melilot trifoil (*Trifolium melilotus*), the sweet smelling grass (*Anthoxanthum odoratum*, and in the leaves of *Angræcum fragrans*, or Faham leaves. All these drugs owe their aroma, and consequently their value, exclusively to the quantity of cumarin they contain, and all the other parts they consist of are not only totally valueless, but in being worked they are as disadvantageous and cumbersome as the well-known extract matter and soft resin of vanilla. These drawbacks having been duly recognized, repeated attempts have been made to produce cumarin from the Tonka bean; this process, however, is not only troublesome, but leads also to losses which make cumarin enormously dear.

Through the production of cumarin by means of synthesis, a real want has therefore been supplied in several respects, and to all those branches of industry which hitherto used it in the shape of the Tonka bean, or in one of the said parts of plants, the opportunity is now presented materially to improve their manufactured articles, to impart to them always exactly the same amount of cumarin, and also—as will be shown—to economize considerably.†

Artificial cumarin was produced, years ago, scientifically; but it has been reserved to our most recent times to perfect the production to such a degree that nature—as in the case of vanillin—has been perfectly attained. The cumarin which is now an article of trade is a production that will convince any one who tests it without bias and prejudice that the Tonka bean has become superfluous, and that its days as an article of commerce are numbered. The perfect chemical equality of the natural and artificial cumarin precludes, in the first instance, any idea of putting the latter in the background. It has neither a weaker aroma than the natural cumarin, nor is it more volatile, nor less durable, for its melting-point is precisely the same. It is no substitute for the Tonka bean, but the same body which yields the aroma. It possesses the same qualities, and cannot be distinguished from the cumarin extracted from the Tonka bean, neither by the senses nor by the means employed by the chemist.

The artificial cumarin possesses the important quality of dissolving easily in almost all the fluids employed. It dissolves in water, spirits, ether, glycerin, vaseline, fat oil, and animal fat, in almost any proportion; and there is probably hardly any substance that is practically used in the various industrial branches concerned in which it is not soluble. As soon as the most important point, *the production of a perfectly faultless cumarin of chemical purity*, had been attained, the next point was to extend its manufacture to a sufficient extent, in order to be able to compete with the Tonka bean, which is being used in larger quantities than is supposed. Only that factory is able to compete which can supply, in case of need, the equivalent of a whole year's return of Tonka beans within the period of a year; for what manufacturer of tobacco, extracts, or perfumery will change his recipe for cumarin, without having absolute security for it? This security exists now, and is guaranteed in a manner the Tonka bean market has never presented.

It suffices to cast only a look on the fluctuations in the price of this drug in order to perceive the embarrassment a total failure of the crop would cause to the consuming branches of industry, small deficiencies of the crop having been sufficient to raise prices by fifty and even one hundred per cent! The cumarin presents, consequently, besides the other advantages already enumerated, a complete independence respecting the Tonka bean, and therefore a safe calculation with reference to the articles for which it is employed. It can be preserved in a cool, dark place for any length of time.

The proportion of cumarin with regard to the Tonka bean has been fixed by exact investigations. The average amount of cumarin in superior beans can be estimated at the most at one and one-half per cent, so that consequently those who have used it hitherto would have to employ the following proportions: One ounce of cumarin for four pounds of the best Tonka beans. The price of cumarin is such that, even if the lowest value of Tonka beans is taken as a basis, the employment of the former is advantageous under all circumstances. Thus, for instance, one ounce of cumarin costs nowadays $3.50, whilst four pounds of good Tonka beans cannot be procured under $6, notwithstanding that the crop of this year has yielded the extraordinarily large quantity of about 220,000 pounds. By far the largest portion of the Tonka beans produced is consumed in the United States. New York and Boston alone imported in 1876 about 200,000 pounds. From the above-stated figures it is sufficiently clear that prices of Tonka beans must still drop considerably before the pecuniary advantage which cumarin offers can be balanced It may be expected that with a larger sale of the latter the cost of production may still be materially reduced, and that the competition of the Tonka bean with cumarin will soon be a thing of the past.

In the manufacture of confectionery and perfumery, cumarin is now extensively used, and its successful introduction and adoption by those who have tried it, has created a large demand; to fill which, some competitors have not scrupled to partially remove the crystals from Tonka beans, and sell these crystals as pure cumarin. To such an extent has this practice been indulged in that it is now almost a rarity to procure fully crystallized Tonka beans, and consumers who pay for prime beans, and are entitled to full value, should protest against a usage so detrimental to them.

Cumarin is a regular article of trade. It is made of unexceptionable quality by the well-known house of Schimmel & Co., of Leipzig (represented in New York by Fritzsche Brothers, 51–53 Barclay street).

[Cumarin is one of the most effective agents to cover the odor of iodoform. About 1 or 2 grains to the drachm will generally be found sufficient.—ED. N. R.]

Syrup of Tolu.

MALENFANT recommends to prepare this syrup in the following manner:

Take of

Tincture of Tolu	250 gm. = 5 fl. ʒ.	
Water	6 kilos	12 lbs.
Sugar	10 kilos	20 lbs.
White of	one egg.	

Beat the white of egg to foam, and mix it with 1 liter (1 quart) of water; then add the tincture of Tolu, and pour the whole upon the sugar contained in a boiler. Now add the remainder of the water, and heat it as rapidly as possible to boiling over a fire, without stirring. Finally strain and filter. The brief boiling is necessary to separate the resinous constituents of the balsam.—*Journ. de Pharm. et Chim.*

* See illustrated article in NEW REMEDIES for 1882, p. 66.

† The artificial production of cumarin may be accomplished in several ways. So, for instance, by warming sodium salicylaldehyde ($Na.C_7H_5O_2$) with anhydrous acetic acid, or by boiling salicylaldehyde with sodium acetate and anhydrous acetic acid. Recent improvements in the process have greatly shortened the time and expense of preparation.—ED. N. R.

The active Principles of the Root of Apocynum Cannabinum.*

BY O. SCHMIEDEBERG.

HUSEMANN was the first to point out that the *Apocynum cannabinum* L., which is used as a remedy in dropsy and, like the oleander, belongs to the Apocynaceæ, might contain a heart poison belonging to the digitalin class. In fact, from the root of this plant, which in its native country, North America, is official, two substances belonging to the digitalin group can easily be prepared analogous to oleandrin or neriin.

Apocynin is a resinous amorphous substance, very easily soluble in alcohol and in ether, but almost insoluble in water, of which a very small quantity is capable of producing the systolic pause in the heart of a frog with the characteristic phenomena. It does not appear to be a glucoside, although upon boiling it in alcoholic solution, or suspended in water with tolerably concentrated hydrochloric acid, a liquid is obtained which reduces cupric oxide in the presence of alkalies pretty freely, but this may be due to other decomposition products resulting from the strong action of the acid. The greater part of the resinous mass appears to remain unaltered; it has, however, become inert, not only in respect to the heart, but generally, and especially a picrotoxin-like action is no longer perceptible.

The second constituent is apocynein, which is a glucoside, and in its characters and solubilities agrees essentially with neriin, or digitalein. But like apocynin, it gives no remarkable reaction with sulphuric acid and bromine.

The preparation and purification of the two substances is effected in a manner similar to that followed for the constituents of the oleander.—*Arch. f. exper. Pathol.—Pharm. Journ.*

On Hot-Air Baths in Laboratories.

BY LOTHAR MEYER.†

THE usual forms of hot-air baths used in laboratories are, almost without exception, affected by drawbacks, particularly the following:

1. Either the temperature in the upper and lower parts is different;

2, or the temperature differs with the duration of heating;

3, or it can only be raised to a moderate degree;

4, or, finally, it can be kept up only by a relatively large consumption of gas.

The author proposes to remove these defects in the following manner:

Equality of temperature may be attained by applying the heat at the side—never below—and by taking care that the flame never comes in actual contact with the metal. The space to be heated is to be surrounded with the hot products of combustion of the flame mixed only with the smallest possible excess of air, in such a manner that a triple layer of heated gases, proceeding from without inward, surrounds the inner mantle. Besides, the outer, or hottest layer, must be protected from too rapid cooling by applying a suitable coating of bad conductibility for heat.

Equality of temperature for any length of time may be best attained by a regulator constructed on the principle of Andrea's, which contains, in a small, confined space a small quantity of a liquid having a boiling point a trifle below the degree of temperature to be maintained. The author prefers the modified form suggested by Kemp, and improved by Bunsen, which is wholly constructed of glass except the lower end of the gas-tube, this being made of perforated sheet-platinum.

In order to fill it, the gas-tube (*g* of Fig. 2) is temporarily replaced by a tube *n* drawn out at both ends and reaching down into the reservoir of the regulator (top of Fig. 1). The lateral branch *p* is now connected with the vacuum-pump, the whole inverted (as in Fig. 1), and the contracted end dipped, first for a moment into the liquid to be used as regulator, and then into mercury, until the chamber is almost, but not quite, full. The apparatus is now turned over, a little more mercury poured in, and the gas-tube *p* inserted. When using the apparatus, the gas-tube is first drawn upwards and, when the proper temperature has been

Fig. 1.

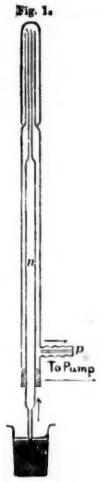
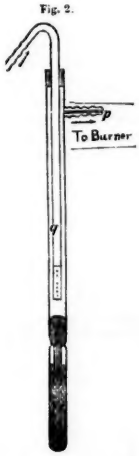


Fig. 2.



nearly reached, pushed down into the mercury until the supply of gas is reduced to a minimum. By cautious adjustment, it is easy to find the position at which the tension of the vapor developed in the tube raises the column of mercury sufficiently to just close the orifice of the tube *p* at the proper temperature. As the air-bath cools off very slowly, but heats up rapidly, it is of advantage to adjust the regulator to a slightly lower temperature than actually required.

It is best to have a series of such regulators, charged with substances, the boiling points of which are about 30° C. apart, and to keep them in a proper receptacle for use. Suitable substances are, for *water-baths:* ethyl chloride, ether, disulphide of carbon, mixtures of ether and alcohol, pure alcohol, benzol; for *air-baths:* water, toluol, xylol or amylic alcohol, cymol or oil of turpentine, aniline or phenol, naphthalin, diphenyl or diphenylmethane, diphenylamine, and perhaps also anthracene. It is not at all necessary to use these in a pure state, particularly those which are solid at ordinary temperature, since they melt more easily when impure. Only very little of solid substances should be introduced, since the excess distils off, and may clog up the gas-tube.

Figs. 3, 4, and 5 shows the air-bath as usually employed by the author. It consists of four concentric walls of sheet copper, two of which are attached to the upper plate, and the others to the bottom plate.

Fig. 3 is arranged for a drying chamber; Fig. 4 for the distillation of substances which easily decompose when coming in contact with (over) heated glass; Fig. 5 for the dry distillation of substances which should not be heated beyond a certain point (f. i., citric acid in the preparation of aconitic acid, etc.).

The innermost cylinder* surrounds the space to be heated, *A*, which is closed from below by a double bottom *a* to be fastened by a bayonet-clamp. The upper cover, also double (the two walls being kept parallel by inner supports, of which one is shown at *h*), has two tubulures, one (*l*) for the insertion of a thermometer, another (*i*) for the regulator, and another for the escape of the heated

* *Archiv für experimentelle Pathologie and Pharmakologie*, Vol. P, 161.

† Abstract from *Berichte der Deutsch. Chem. Ges.*, 1883, 1087.

* The air-chambers illustrated above are not squre, but *round* The illustrations represent a vertical section through the centre.

vapors. To this cover the two cylinders *d* and *f* are attached, while *e* and *c* are soldered to the bottom piece, which is also provided with three legs. The heating is done by a brass ring attached to the legs, with a supply of gas controlled by the regulator *i*. The ring has holes of two to three millimeters bore in intervals of three centimeters. The little flames thus produced burn quietly, and may be easily regulated. With the same amount of gas which is furnished by a gas-cock supplying an ordinary Bunsen's burner, the space in *A* (= about five liters) may readily be heated to 300° C. and over, even when it is not closed below. But in order to obtain this result, the intervals between the several cylinders, in which the products of combustion circulate, must not exceed ten millimeters. Besides, the outer cylinder *f* must be protected with a non-radiating cover. The best, for this purpose, is a layer of asbestos (in sheet), to be applied so as to leave a little space between it and cylinder *f*, which space is to be filled out with siliceous earth ("kieselguhr") or mineral wool.

If tubes are to be heated, the modification shown in Fig. 6 may be used. It is also here of importance that the channels through which the warm air circulates are very narrow, scarcely one *cm.* apart. The eight iron tubes pass through the narrow walls, which latter are not double, but covered with little flaps hinging upwards (one corresponding to each tube), as closely as possible fitting to the surface of the outer cylinder, but remaining slightly distant from the ends of the tubes. In case a glass tube (inserted in one of the iron-tubes, for being heated) should explode, its fragments are caught by the loosely hanging flaps. Between the iron tubes, a Babo's regulator may be inserted.

For special uses the above forms of air-baths may be still further modified. It is, however, of importance to remember that the heated gases should surround the space to be heated in a triple layer; that the hottest layer should be near the outside, and that the intervals between the walls should admit as little excess of air as possible. The gases escaping above must have the property of extinguishing a glowing splinter of wood.

Mr. Edmund Bühler, of Tübingen, furnishes air-baths of the above described construction.—*Ber. d. Deutsch. Chem. Ges.*, 1883, 1087.

Liquefaction of Nitrogen.—Wroblewski and Olszewski have succeeded now also in liquefying nitrogen gas. It forms a colorless liquid, transparent, like oxygen, and shows a plainly distinguishable meniscus. It evaporates very rapidly.—*Compt. rend.* and *Chem. Zeit.*

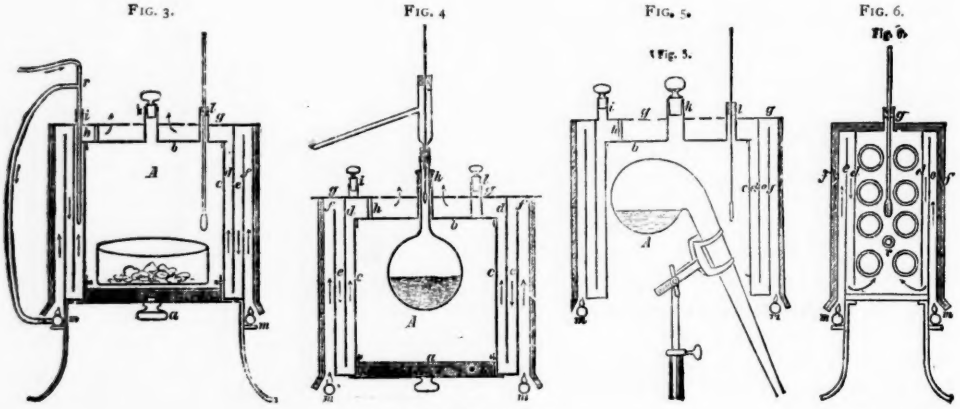
Kairine.

THE manufacturers of this new substitute for quinine (see NEW REM., 1883, 41), Messrs. Meister, Lucius & Brüning of Höchst on the Main have found that there is another substance of the same composition as the original kairin discovered by Fischer, and which is more easily prepared. They now make and sell the new substance as "kairine" and the substance formely so named is termed "kairine M."

Kairine is usually dispensed in wafer or gelatin capsules.

Coating for Flasks or Retorts permitting the Application of a high Heat.

IT is customary, in laboratories, to coat glass or porcelain-vessels which are to be exposed to a high heat whereby the glass might be liable to fuse or the vessel be fractured if exposed to a sudden draught of cold air, with clay, either alone, or mixed with cow-hair or asbestos to make it more cohesive. But this coating, though very cheap, has the fault of easily cracking and peeling off, thereby causing a fracture of the vessel.



Meyer's Hot-Air Baths.

It is much better to coat such vessels with a mixture of infusorial earth and water glass. If properly applied, this will last for weeks; it is inexpensive, and so effective that the coating even permitted to continue the use of some retorts previously covered with it, which had accidentally been fractured afterwards. It is of importance to make the mixture so that it forms an elastic, soft dough, but not liable to run. A mixture of 1 part of infusorial earth and 4 to 4½ parts of water-glass (silicate of soda) will about produce such a dough. It is not practicable to give exact proportions, since the water-glass of the market varies considerably and even the infusorial earth varies in moisture. The portion of the vessel to be protected is coated with the dough to a depth of ½ to 1 centimeter, and the vessel then exposed to a moderate temperature in a drying oven or on a retort-stand over the oven. If the temperature is raised too high in the beginning, the mass becomes porous from bubbles. However, if the bubbles are compressed with the fingers, as soon as they are seen to form, the vessel may be dried even over a naked flame, by constantly keeping it in motion over it. Should any fissures make its appearance, some of the plastic mass is smeared over them and dried again. If any part of the vessel is to remain transparent, water-glass alone may be applied in several, successive layers, each of which must be allowed to dry before a fresh one is applied.—EUGEN SCHAAL, in *Deutsche Ind. Zeit.*, 1883, 147.

Preparations of Pepsin.*

BY DR. ADOLPH TSHEPPE.

ALTHOUGH an immense amount has been written and published on this subject, during the last decade, our knowledge and our individual judgment regarding the same has by no means made much advance, and to-day we are still in the same position of empirical experimentation in which we were formerly. We admit having made a decided progress, but if we consider the great popularity enjoyed, for instance, by preparations of pepsin, proven by experimental research to be worthless, the practical application of what is known concerning the use of this remedy seems to have been promulgated only to a very limited degree, especially in the medical profession. The following remarks have been written with a view to furnish answers to questions frequently asked me.

The gastric juice, *vulgo* pepsin, was introduced as a remedy by Dr. L. Corvisart, who supposed that this juice, which was recognized also as the digestive principle for albuminoid bodies outside of the stomach, would be indicated in all cases in which, from failure of its secretion, disturbances of digestion or dyspepsia existed. The physiological supposition has been verified by experience, and the gastric juice has since been employed in different forms, as wine, elixir, glycerol, or in the dried state, and has been prepared in many different ways under the name of pepsin, as the apparently isolated digestive principle, and, after a great deal of opposition, it has at last been introduced into all the pharmacopœias.

Pepsin is officinal in our Pharmacopœia under the name of Pepsinum saccharatum; in the German Pharmacopœia it is simply called Pepsinum. Modes of preparation are not mentioned in either of these pharmacopœias, but its properties † and tests are given. The U. S. Pharmacopœia has adopted Scheffer's method of testing the remedy and his "standard strength:" 1 part pepsin in 500 parts water, acidulated with ½ per cent of absolute hydrochloric acid (*i. e.*, 1½% of the officinal concentrated acid), shall digest 50 parts of hard-boiled albumen within 5 or 6 hours, at a temperature of 38–40°. The German Pharmacopœia demands double strength, 1 part to dissolve 100 parts of albumen cut into small pieces of the size of a lentil; time, 4 to 6 hours. This capability of dissolving albumen is badly expressed in German by the "percentage of pepsin," so that a pepsin which is capable of dissolving a hundred times its weight of albumen is called 100% pepsin, not because it contains 100% of pure pepsin. Our officinal pepsin would be therefore a 50% preparation, and one cannot say that the pharmacopœia makes a very high demand, as there are many pepsins in the market which are much stronger, and which may be changed into a pepsin of 50%, by diluting with sugar of milk. The German Pharmacopœia does not mention any substances by which pepsin may be reduced to a normal strength, but the pepsins which come to us from Germany are also diluted with sugar of milk. The Pharmacopœia also demands that it shall be soluble.

Its power of dissolving albumen changes greatly under different circumstances; and any comparative experiments have to be instituted always under the same conditions. Temperature, percentage of acid, concentration of the pepsin-solution, *i. e.*, the quantity of fluid in relation to the pepsin employed, have their determining influence upon the quantity of the albumen dissolved, as also upon the time necessary for its solution; and for the latter (the time) the degree of division of the albumen is especially important, this influence even going so far that the time necessary for the solution of finely-divided albumen amounts only to as many minutes as, according to the pharmacopœia, hours are necessary.

Our pharmacopœia does not mention a word about this division of the albumen, and it can be concluded only from the time given, that the pieces of albumen have to be of about the same size as those which the German Pharmacopœia directs.

For the purpose of comparing the different preparations of pepsin I have made use of the following somewhat different procedure, as it permits their examination within a short time, while according to the process given in the Pharmacopœia, one to two days are necessary.

Albumen, taken from the raw eggs, is beaten to destroy the cellular walls and mixed with water, sulphate of magnesium is dissolved in the fluid, the latter filtered, and the whole is heated after a few drops of acetic acid have been added. The albumen separates as a fine cream-like precipitate, which, on the filter, is freed from the salts by water and then diluted with a definite quantity of fluid containing 0.5% of absolute hydrochloric acid (5.0% diluted hydrochloric acid, Ph. U. S., 1883).

For the purpose of comparing the digestive power of different preparations of pepsin, I made solutions each containing 1% of the respective pepsin, and to this I added 25 *cm.* of my albumen-magma (just described), having previously shaken the latter thoroughly and exposed the same to a temperature of 40° C. This temperature was preserved in the water-bath. Solution sets in within fifteen minutes, when 25 or 10 *cm.* of the magma are again added to each solution, and this is continued until at last the pepsin does not visibly dissolve any further addition. This point may, near its approach, generally be recognized by the fact that the dissolving process itself goes on more slowly. In case one employs for the different kinds of pepsin relatively 100, 150, 200, 400 *cm.* of the albumen-magma, these numbers will express the relative dissolving power of the different preparations of pepsin in the same numbers. To reduce this value to the albumen, which is coagulated in one whole egg, the percentage of dry substances in the albumen, or in the solution employed, is calculated and then multiplied with seven. (It is to be remarked, that albumen generally contains 14.25% of dry substance.) The albumen of one egg for every 100 or 150 *cm.* fluid may be recommended for practical purposes. It has further to be remarked that the solution, which is finished within a short time, does not represent any peptonization of the albumen; only the first stage of the process of peptonization makes its appearance; the solution takes place by the change of the albumen into syntonin, which is completely precipitated, not by boiling, but on being carefully neutralized with an alkali, or on being boiled with an excess of carbonate of lime or of carbonate of lead. The addition of chloride of sodium to the acid solution also precipitates this syntonin. The perfect metamorphosis into peptone demands considerable time, and is generally not finished at the end of twenty-four hours. The quantity of "peptone" still present as syntonine, and not peptonized, is recognized by the amount of the precipitate produced by ferrocyanide of potassium and acetic acid. This precipitate still appears even if nothing more is thrown down by neutralization; no further sediment takes place.

The different kinds of pepsin of commerce are prepared according to different principles, representing the different phases of experimental empirics, or of the scientific knowledge of this substance. Up to the present time it has not been possible to prepare a perfectly pure pepsin, the preparations sold to-day as such being merely mixtures of certain albuminoid bodies possessing digestive power, and therefore they are looked upon frequently as absolute pepsins, and sold as such by the manufacturer.

No reagents are known by which it would be possible to separate the pepsin from the many other protein-substances and to prepare it in a pure state; nor can pepsin, on the other hand, be separated by precipitating the other albuminoids accompanying it, because when these are precipitated it is carried along with them. But fluids have been

* Lecture delivered April 12th before the New Yorker Deutsche Apotheker-Verein, translated by Hugo Engel, M.D. (The translation in part revised by Ed. N. R.)

† Under "Properties of Pepsin," a *lapsus linguæ* has happened in the German Pharmacopœia, copied also in other places; it says, that pepsin does not give a clear solution with water, but that the solution can be made clear by the addition of *two* drops of muriatic acid. That these two drops really refer to a quantity of pepsin equivalent to as much as the "point of a knife" will carry, is left to the imagination of the reader.

obtained possessing a considerable digestive power, and containing, therefore, pepsin, which fact permitted the deduction, that pepsin is *not* precipitated by the well-known precipitants of albuminoids, such as boiling, tannic acid, acetate of lead, mercuric chloride, nitrate of silver, acetic acid, or ferrocyanide of potassium; although it may be precipitated by basic acetate of lead, chloride of platinum and alcohol; and even the modes of preparation of the commercial pepsin are based upon the precipitation of albuminoid bodies, to which the real pepsin adheres only mechanically.

The following are some of the processes by which pepsin, each time with different properties, is obtained; properties which in reality do not belong to the digestive ferment itself (which to-day is still hypothetical), but to the accompanying albuminoids forming the greater part of the product.

1. *Old Method.* The gastric juice is obtained by scraping the mucous membrane of stomach, extracting with water, filtering, and evaporating at a moderate temperature (Lamatsch's Pepsin). All former pepsins were prepared after this primitive method. To this category belong also the pepsin-wines and elixirs prepared directly by digestion of the finely-cut stomach or its mucous membrane, and the pepsin which is procured by alcohol from the respective digestive fluids.

2. *French Method.* The extract obtained from the stomach is precipitated with acetate of lead, the precipitate washed, suspended in water, treated with sulphuretted hydrogen, filtered, evaporated to the consistence of syrup, and mixed with starch. (French Codex, Boudault's Pepsin.) Since this process precipitates the albuminoid bodies, but not pepsin, only so much of the latter can be effective as has been carried along by the precipitation of the albuminoids. Besides, by this complicated process the effect of the original fluid seems to have been so decidedly diminished that only very little can be expected from the action of this pepsin. The French Codex is satisfied if the "Pepsine amylacée," digests twelve times its weight of albumen; Boudault considers it sufficient when his pepsin digests four times its weight of fibrin.

3. *Scheffer's Method.* The fact that the acidulated gastric juice is precipitated by a concentrated solution of chloride of sodium as a cream-like substance, seemed to prove that it were possible at last to obtain a pure pepsin. However, the pepsin is not precipitated in this manner, but the albuminoid bodies are; and only the property of pepsin to be carried along with precipitates of any character contained in the pepsin-fluid, causes the albumen-precipitate of Scheffer to contain pepsin. This albumen is in the condition of syntonin or acid-albumen. The pepsin is prepared by pressing the precipitate, redissolving it, and repeating the precipitation, when the mass expressed represents the so-called Pepsinum purum (Scheffer) or, with the addition of sugar of milk, the Pepsinum saccharatum of our own Pharmacopœia.

In this manner, and by careful manipulation, really excellent pepsin preparations may be obtained, the physical properties of which, regarding odor and color, meet all just demands. The only drawback is, that by the addition of uncertain quantities of sugar of milk, no limits have been put to unlimited dilution, and the latter can to some extent only be controlled by testing how much further dilution any given sample would stand. It is also possible to make a proximate assay of these preparations (which should be called "Saccharum pepsinatum" rather than "Pepsinum saccharatum") by precipitating with chloride of sodium or with picric acid. Some manufacturers of high-grade pepsin indicate directly the quantity of sugar of milk with which their products may be diluted to still merit the name of pepsin, and this shows very strikingly how much sugar of milk is sold under the name of pepsin.

4. The *latest method* for the preparation of not only a very handsome-looking pepsin, but of one possessing a power of digestion far surpassing that of all other preparations of the gastric juice, is that of Carl L. Jensen, formerly of Dakota, now of Philadelphia. This pepsin, to which on account of its appearance the name "crystallized" has wrongly been given, is easily soluble in water without the addition of an acid, is not precipitated by common salt, and turns out to be in every respect a peptone, but of very considerable digestive power; in fact, itis the most powerful pepsin preparation obtainable in the market. I have found Jensen's "Crystallized Pepsin" to be really one of 500%; at least, if its solubility is tested under the most favorable conditions for dissolving albumen.

In contradistinction from those pepsins which are obtained by precipitation with common salt, Jensen's preparations of pepsin contain, besides the ferment which dissolves albumen, another which coagulates milk, the same which exists in rennet and differs from pepsin; this ferment remains partly or wholly dissolved in the saline solution of Scheffer's process. Since it is the peptones proper (but not pepsin, as has been erroneously maintained) which are the "carriers" of the digestive power, we may say that they are prepared by maceration of the stomach and of its mucous membrane in acidulated water at a temperature of 38° to 40° C., by which the albuminoids change into peptones, and can be separated easily, so that by drying on glass they are finally obtained in transparent grains or scales, the superlative properties of which have found their expression in the hyperbolic names given them by their discoverers.

Several manufacturers have heretofore offered quite praiseworthy preparations, which have, however, been dispensed only in consequence of the moral obligation of the apothecary towards the physician; but it must also be admitted that preparations far less valuable, and the disagreeable odor of which already indicated their quality, have also been employed against the better conviction of the apothecary.

The peptone-nature of these preparations is evidenced by the fact that they cannot be precipitated by acetate of lead (unless sulphates are accidentally present), nor by alcohol in acid solution, but by mercuric chloride, nitrate of silver, picric acid, or tannic acid. With caustic potash and a little solution of sulphate of copper, the well-known biuret-reaction sets in.

PHYSIOLOGICAL DEDUCTIONS.

For the purpose of testing the solvent power of pepsins for albumen, the most favorable conditions have been determined, and it has been found that pepsin without acid does not dissolve albumen at all; but that the addition of hydrochloric acid containing 0.5% to 0.6% absolute acid for temperatures of 38° to 40° C., and a less addition, viz., of 0.2–0.3 of the same acid for higher temperatures, 40°–50° C., favors the strongest effect of the pepsin. Somewhat weaker is the action of phosphoric, nitric, and sulphuric acids; with lactic acid and the other organic acids, the effect is diminished. Metallic salts and antiseptics, possessing no coagulating effect upon albumen, do not disturb this process of solution.

Temperatures higher than the normal temperature of the human body, and a percentage of acid larger than is met with in the human stomach, may be permitted as proper conditions for the artificial production of peptones or for the comparison of the effect of different kinds of pepsin; but for demonstrating the amount of solvent power of a pepsin for therapeutical purposes, it would be necessary to establish the identical conditions actually existing in the human organism, and, under these conditions, the coefficients of solvent power usually claimed for pepsins are too high. Besides, for the practical preparation of meat peptones, the experimental results gained in this manner have been proven to be illusions because the yield of meat peptone represents only a small fraction of the albuminoid substance contained in the muscular substance employed. (I know a manufacturer of peptones, who, without the use of pepsin, manages to get more elegant preparations in larger quantity than they can be obtained by pepsin.)

Pepsin, as well as all other similar ferments which represent products of a continuous physiological function, possess one great drawback, which cannot be removed. We have invariably at our disposal only that quantity of the pepsin-ferment which the stomach of a slaughtered animal at a certain time either has secreted or prepared in cells. It is questionable, therefore, if the therapeutic employment

of this ferment has any advantage at all when given to assist the process of digestion in a dyspeptic stomach, and it is doubtful how much in the cases mostly benefited by the use of the pepsin has to be ascribed to the effect of the latter, and how much to the hydrochloric acid accompanying it.

According to the investigations on the amount of digestive fluid in individuals who, on account of a gastric fistula, were proper subjects for these experiments, this quantity proved to be (in the human organism) 2 kilograms calculated for 24 hours. Although the demands on digestion made by the stomach of the hog are totally different, the conditions of the secretion of pepsin are similar to those in man; and the quantity of pepsin which can be obtained at a definite time from a single stomach, even though more could be obtained from that of a hog than from that of man, would, on account of the loss, represent at most a *single dose*.

But experience teaches us that from a good stomach the manufacturer in a favorable case may obtain 4–5 ounces of this saccharated pepsin of the strength as formerly in vogue, viz., $\frac{1}{2}$.

This quantity, according to the method usually employed, was dispensed in 125 doses of ten grains each, or in 250 doses of five grains each. Calculating now the solvent power of the pepsin, we find that ten grains of pepsin, according to the former statements, could dissolve 120 grains of boiled albumen. For the digestion of two ounces of beefsteak, there would be necessary, therefore, 80 grains of pepsin, and for that of ½ pound even 320 grains. To-day, the strength of the preparations of pepsin in the market is far greater; but we must not forget, that hand in hand with the methods of preparation, those of the tests have also improved. Our pharmacopœia demands that one grain of pepsin should dissolve fifty grains of boiled albumen; in the case above mentioned, viz., for the digestion of ½ pound of beefsteak, even of this digestive preparation eighty grains would be necessary to effect solution. It must be admitted that for the pepsins of greatest effect (I myself have found Jensen's pepsin as probably one of 500 degrees) only the 500th part would be necessary for the same purpose; and one ounce of a protein-substance, therefore, would demand one grain of this pepsin only; but as mentioned above, even in the best preparations the percentage of peptones obtained during the process from those really present is a very limited one, and the general objection made above is not answered even by the fact that very active pepsin preparations are actually obtained.

The logical deduction, therefore, from these observations would be, that the small doses of pepsin of feeble digestive power should be replaced by very much larger doses of those preparations of pepsin which are recognized as the best, whenever any practical results are to be expected and looked for; that all favorable conditions which are known experimentally to produce a rapid and perfect solution of the albuminoids should never be lost sight of when the remedy is employed for medicinal purposes, and that this effect ceases when pepsin is administered either simultaneously with or in combination with alkalies, a rule which, in spite of frequent warning, is, up to this day, still disregarded by many.

The Maple Sugar Industry in Berkshire Co., Mass., has suffered greatly during this season. The yield has only been about one-half, and in some places only one-fourth, of that of other years, owing to the unfavorable weather and the late spring. The necessary conditions for promoting the flow of the sap, *viz.*, cold nights, warm sunny days, and north-east winds, were mostly absent. The demand for syrup will be covered partly by purchasing the remainder of last year's crop of maple sugar, which will be melted and put on the market as "new crop syrup." Offers are made for pure sugar at 25 cents per pound, and for syrup at $2 per gallon. Producers do not like to part with their stock at these figures.—*Corresp. of N. Y. Staatszeit.*

[Much of the maple sugar and syrup now sold is nearly pure glucose.—Ed. N. R.]

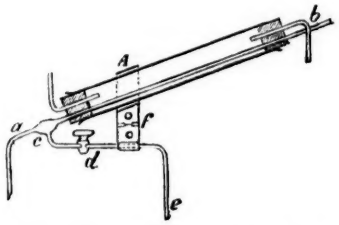
New Test for Detecting Albumen in Urine.

BY ARTHUR R. HASLAM.

While recently engaged in some experiments, I had occasion to add a solution of chloride of iron to a diluted solution of albumen into which, some time previously, a small quantity of chloride of sodium had been thrown. The result was the formation of a dense opaque white precipitate. This precipitate, when well washed and dried, still contained iron, from which circumstance I should suppose it to be a compound of albumen and iron.

I have experimented on this reaction as a test for albumen, especially for that form which it assumes in urine, and it appears certain in its results, and has some advantages in its favor over the old nitric acid test, being much more delicate.

After a series of experiments, I have adopted the following method for using the test: A portion of the urine supposed to contain albumen is poured into a test-tube, and a few drops of a solution of chloride of sodium added and well mixed; then a solution of chloride of iron is carefully poured down the tube, forming a layer. If the appearance of a whitish cone be noticed, albumen is present. If phosphates are present in the urine, care must be taken to add (before using the test) sufficient acetic acid to make the urine acid.—*Chem. News*, 1883, May 25th.



Improvements of Liebig's Condenser.

In chemical or pharmaceutical operations, it often becomes necessary, after having used an upright condenser for the purpose of continuous extraction, to reverse the whole condenser, in order to recover the volatile menstruum. This also necessitates, in most cases, a change of the current of water for cooling the apparatus. All this may be avoided by constructing the condensing tube in the manner shown in the illustration. From a bulbous expansion blown in the tube at its lower end, a tube *c* arises, provided with a faucet *d*, and subsequently turned at a right angle downwards. At about the centre between the faucet and the angle, the glass tube passes through a support connected with the condenser, whereby it is in a great measure protected from being broken off. The use of this modified condenser is almost self-evident. If it is used for continuous extraction, so that the condensed liquid constantly flows back into the flask connected with *a*, the faucet at *d* is closed. The condensed liquid will then at first fill the tube *c* until it flows over into the tube *a*. Finally, when the operation is to be finished, a receiver is placed under *e*, and the faucet is opened, when all the condensed liquid may be collected without disturbing the connections of the condenser. It is advisable before opening the faucet *d* to dip the end of the tube *e* into a flask containing a portion of the liquid which is to be distilled over, f. i., ether. The depth to which the tube may be dipped should be less than the length of the column of liquid contained between *c* and *d*.—Ferdinand Simand, in *Dingler's Pol. Journ.*, 248, 463.

Spurious Maple Sugar.—It is said that the flavor of maple syrup may be communicated to cane or glucose syrup by tincture of guaiac deprived of its resin by precipitation by water.

Administration of Santonin.

DR. L. LEWIN recommends, in the *Berl. klin. Wochenschrift*, the following forms of administering santonin:

1. ℞ Santonini..... 0.2 gm.=3 grs.
Ol. cocos nuciferæ.....60.0 " 2 fl. oz.

Dose: a tablespoonful two or three times daily.

2. ℞ Santonini ..... 0.2 gm.=3 grs.
Ol amygdalæ expressi .....60.0 " 2 fl. oz.
Ol. cinæ (Levant wormseed). gtt. 4 gtt. 4.

Dose: a tablespoonful two or three times daily.

3. ℞ Santonini..... ..... 0.2 gm.= 3 grs.
Ol. ricini.....20.0 " ¾ fl. oz.
Ol. cinæ. ..... gtt. 4 gtt. 4.

Dose: a teaspoonful two or three times daily.

4. ℞ Santonini..... 0.2 gm.= 3 grs.
Ol. ricini.....20.0 " ¾ fl. oz.
Ol. cinæ..... gtt. 4 gtt. 4.
Sacchari.....q.s. q.s.

Make into a soft paste with sugar. To be given in doses, during 48 hours.

5. ℞ Santonini.. .....c.05 gm.=¾ gr.
Ol. ricini.....5.0 " 75 grs.
Ol. cinæ..... ..... gtt. 1 gtt. 1.
Fill into four capsules.

Dose: one capsule two or three times a day.

Lewin finds fault with all the usual methods of administering santonin. According to him, it should be given in its least soluble form, *i. e.*, in that form in which it will be the least readily absorbed, as the effect desired is not a general, but a local one. An oily solution of santonin undergoes, according to his experiments performed on animals, not the slightest absorption in the stomach, so that under no circumstances is any trace found in the urine. Almost any kind of oil may be employed—cocoa-nut oil, olive oil, cod-liver oil, or castor oil. He recommends that three grains of santonin be mixed with two ounces of oil, and given in four doses. He thinks that a useful addition to the above would be that of an oil contained in santonica, the oleum cinæ æthereum, for the reason that all ethereal oils have been shown to act as poisons on the lower forms of animal life.

Preparation of pure Hydrobromic Acid on a small Scale.

A SIMPLE process for preparing this acid is recommended by Grüning in the *Pharm. Zeitsch. f. Russl.*

100 gms. of bromide of potassium reduced to a coarse powder are put into a retort of about the capacity of 1 pint (or a little over), the retort connected with a gas delivery tube and then 280 gms. of phosphoric acid of the spec. grav. 1.304 poured in. Heat is carefully applied by means of a burner, the retort standing on a piece of wire-gauze. At first, the bromide of potassium dissolves in the phosphoric acid, but subsequently, when the liquid becomes less, some of it separates again, which causes the liquid to bump, but without any danger of breaking the vessel. After all the salt is dissolved, the liquid commences to boil quietly, water being carried over at first. Next, a little hydrochloric acid passes over, derived from the chloride always accompanying the bromide. This is separately collected, as long as the liquid distillate is acid. Finally pure hydrobromic acid gas passes over which is collected in distilled water. To prevent the water from rising back in the retort, it is well to connect the delivery tube with the narrow outlet of a funnel, and to dip the wide mouth of the funnel just below the surface of the water.

The resulting hydrobromic acid may be adjusted either analytically or by the specific gravity. 100 parts of bromide of potassium yield about 80 parts of a 10-per-cent acid.

Note on Essence of Green Ginger.

BY C. SYMES, PH.D.

THE increased use of ginger by manufacturers of mineral waters and others, of late years, has created a demand for a "soluble essence," *i. e.*, an essence which, when mixed with water, causes little or no opacity therein. Dr. Thresh's scientific investigation of the constituents of this rhizome, particularly of the nature of its resinous constituents, added considerably to our knowledge of its composition. But, strange to say, the process devised by him, on the basis of this investigation, for the preparation of a soluble essence did not give (to my mind) very satisfactory results. Indeed, Dr. Thresh has since testified to the superiority of an essence produced by another maker. It would seem, therefore, that the field is still open for the application either of science or the results of experience. The contribution I have to offer this evening is a simple, short, and practical one. Many, indeed most, drugs deteriorate by age, whilst some few, such as *Rhamnus frangula bark*, are said to improve as they grow older, at least to a certain point.

Now, it occurred to me that the nature and properties of ginger, and its behavior towards certain solvents of its active constituents, may not be constant at all periods, and the receipt from Rio Janeiro of a supply of green ginger grown at Santa Catherina enabled me to make an experiment in this direction. The ginger, of which I have here a sample, occurs in large pieces; it is quite soft, and is not decorticated.

Two methods were tried for removing the outer portion: the one, simple scraping; the other, by first soaking in boiling water. The latter did not appear to possess any special advantage, and by the former it lost fully fifteen per cent of its weight. After a few hours' exposure to the air, it was weighed, thoroughly dried, and reweighed, when it was found to have lost sixty-five per cent of moisture.

Taking a sample of the ginger from which the epidermis had been removed, and which had been surface-dried by exposure for a few hours to the air, I cut it in thin slices and macerated it for some days with an equal weight of rectified spirit, which, when filtered, yielded an essence possessing a very fine aroma, and which, when mixed with water, scarcely rendered it turbid in the least degree. It is fairly strong, and could doubtless be prepared stronger, were the drying of the ginger carried a little further. Probably, however, its solubility would diminish if the drying were completed, and, of course, the result would cease to be essence of green ginger.—*Pharm. Journ.*

During the discussion of the preceding paper, which was read at an evening meeting of the Pharmaceutical Society (April 4th, 1883), Prof. Bentley remarked, in reply to an inquiry, that a great deal of the ginger mentioned by the author of the paper came over to England, a few years ago. He thought there would be no difficulty in getting it if there were any demand for it. This form of ginger had been described by Pereira.

Opium in Roumelia.

GREAT success has attended the cultivation of the poppy in Roumelia, details of which are supplied by H. M. Consul at Salonica. The first attempt was made about seventeen years ago by a Turkish farmer at Istip, who, having brought a handful of the seed from Asia Minor, was altogether successful in his experiment. Dating from the year 1866, a very large industry in opium has been inaugurated. The Roumelian preparation is extremely pure, containing about 11 per cent of morphia, while that of Smyrna yields scarcely 9 per cent. Last year the production of opium from this province reached the respectable figure of about 135,000 lbs., besides an enormous amount of poppy-seed; most of the drug found its way to England, while most of the seed was exported to Germany and France.

The Turkish Government, in this respect alive to its own interests, remits the tithes on opium and poppy-seed for one year in the case of lands that are thus sown for the

first time, and distributes full instructions on the process of cultivation, extraction and preparation. The seed is sown from September to March in districts where there is no hoar frost in spring and autumn; but in places where there is hoar frost, September and the spring are selected, after the chilly weather is passed. Clay soil and damp are fatal to success.

The ground is well manured, and after the opium crop has been removed, wheat sown in the same field will be abundantly productive.

The soil must be thoroughly broken up, hand-sown, and again perfectly disintegrated and mixed with the seed. As soon as the plants begin to appear they are carefully separated, to allow sufficient space for growth, and the soil is hoed and weeded. The pods are at first green in color, the hue being changed to yellow on maturity. Just before this color change takes place, a thin, watery, light green film forms over the pods, which itself becomes firm. This is the time selected for the collection of the juice. An incision is made in the pod with a knife adapted to the purpose, beginning from the middle and going round the edges, leaving a space of about a finger's breadth. The white, milky, bitter-tasting fluid then exudes. Gradually acquiring more consistency, its color deepens, and in twenty-four hours it resembles coffee, and is thick as paste.

Scraping this off with a blunt knife, the paste is put into a poppy leaf until from twenty to thirty drachms have been collected, when the edges of the leaf are turned up to preserve the contents. The work of cutting commences early in the afternoon and continues until nightfall.

The laborers set to work on the following day, as not not more than twenty-four hours must elapse between making the incisions and collection. Unripe pods must wait. Attention is paid to certain details, so that the exact season for collecting opium may not be missed.

The whole work must be performed in eight or ten days, and the pods must be cut precisely at the right time, or there will be no yield of opium. High wind and rain are equally to be avoided, for both either scatter or destroy the juice as fast as it exudes from the cut seams. After the crop has been gathered, the pods change to a rose color, when the plants are taken up by the roots, one by one, and collected in small bundles. These are bound with a young green withe, placed upright in the ground with the roots covered, and to remain for a few days until the seed contained in the pod becomes ripe and dry. Another method is to sever the pods from the stem, collect, dry and thresh. No part of the plant is wasted; from the pods reduced to ashes, a fluid is extracted, used for bleaching purposes, and said to be effective. The oil is extracted from the seed, and the residue is given to buffaloes, cows, and black kine to promote the yield of milk.—*The Chemist and Druggist.*

A new Antineuralgic.

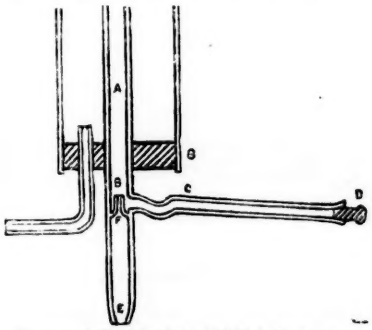
In a recent trade circular, Mr. Hänsel, of Pirna, mentions that he has received from a mercantile house in Columbia a quantity of dried flowers derived from a plant described under the name "*Sulamita vitulus*," which grows abundantly on the eastern spurs of the Cordilleras and is used as a remedy in neuralgic affections. The flowers are said to possess, in the fresh state, a delicate aroma of such intensity that a single fresh flower laid among clothes is sufficient to impart to them a permanent perfume. Distillation of the dried flowers did not give such favorable results as were expected, the yield in essential oil not exceeding one-half per cent, which may have been due to loss occurring during the long journey. The oil was heavier than water, and in its odor markedly resembled salicylate of methyl which is the principal constituent of oil of wintergreen, and it also sinks in water. The flowers sent, however, came from a melastomaceous and not an ericaceous plant.—*Drog. Zeit.* and *Pharm. Jonrn.*

Note by Ed. N. R.—We have, thus far, not been able to learn who has described a plant under the name *Sulamita vitulus*. Certainly, no such genus name can be found in the botanical works of reference, even down to a very recent date. Prof. Sereno Watson, of Harvard University, who has also been consulted, has likewise failed to find any mention of it. The name *may* have been assigned to it by the some South American botanist, whose diagnosis has so far escaped general notice. Or, there may be a mistake about the name. We have written to some friends for information on the subject.

A Modified Liebig's Condenser.

BY W. A. SHENSTONE.

For effective working, the original form of Liebig's condenser leaves nothing to be desired. It has, however, the disadvantage of occupying a great deal of space, and when used as part of an arrangement for digesting substances which are subsequently to be distilled, as in the preparation of formic acid by heating oxalic acid with glycerol, or in the preparation of ethyl iodide by digesting together red phosphorus, alcohol, and iodine, there is a certain amount of trouble and loss of time in arranging it for distilling after the digestion is completed. These disadvantages, and especially the former, as I frequently want to have several operations in which condensers are employed simultaneously on a small lecture table, led me to try the modification I now describe. It is, as I expected, superior to the original form in taking up but little space, and in its ready adaptability to the purposes of digesting and distilling without rearrangement; and the only objection I find to it is that, as the distillate is delivered rather near to the source of heat, it would be somewhat dangerous to employ it in distilling highly volatile and inflammable substances, such as ether and benzin.



Shenstone's Modification of Liebig's Condenser.

A tube A, which may be of any convenient size, is fitted in the ordinary way inside a larger glass tube, for which purpose I think the old-fashioned method of employing corks answers better than the modern plan, in which the outer tube is contracted at its ends, and connected with the smaller tube by pieces of India-rubber tube. At B, the tube A has a small projecting tube F about ten *mm.* in length. Into the side of A, so as to be below the level of the open end of F, a side tube C, having a slight dip at *c'*, is joined on, its open end D being about five *mm.* below the level of the other end. A small stopper is ground into C at D. D may conveniently be two *mm.* to three *mm.* in diameter.

The end *E* can be attached to flasks by means of corks, or as might occasionally be desirable, can be ground to fit the neck of a flask.

When the condenser is in action, the vapor passes up through *F*, is condensed in *A*, and falls into the annular space around *F* at *B*. If the stopper is fixed at *D*, this space soon fills, and then, as further condensation occurs, the products overflow into the flask through *F*. The amount that collects at *B* with a well-made tube is very small, as the air in *C* usually prevents the liquid from

flowing into it when the stopper is fixed. When the apparatus is to be used for distilling, the stopper *D'* is removed, and the distillate then flows out at *D*. The bend at *C'* was made in order that the first portions condensed might flow there, and so prevent any vapor from escaping by *C* at the early part of the operation; from what I see of the action of the tube, I think, however, that it is not necessary.

The outer tube should be brought down as near to the point as possible: for the vapor coming up through *F* slightly warms the liquid at *B*, so that it is delivered at a slightly higher temperature than that of the water in the condensing jacket, and it is desirable to avoid this as far as possible.

When the temperature of the vapor must be known, I hang a thermometer inside *E* by means of a little hook of platinum wire. The length of the tube therefore from *B* to *E* should be such that there shall be room for an ordinary thermometer between the point *B* and the level of the liquid in the flask below. It is perhaps an advantage that in thus using this condenser, the actual temperature of the vapor is observed, as the stem of the thermometer is entirely immersed in it.

Mr. Cetti, the maker of the tube from which this is drawn, tells me that for fractional distillation, if, as might be the case, the form of tube proposed by Dr. Armstrong were employed, there would be no difficulty in grinding the end *E* to fit the upper end of the fractionating tube.

I have found this form of condenser so compact for moving about, and so easy and convenient to work with, especially for lecture purposes, that, as I believe such a modification has not been described before, I have thought it might be worth while to bring it under the notice of the Society.—*Journ. Chem. Soc.*, vol. 43, 123.

FIG. 1.

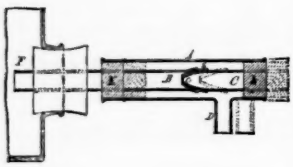


FIG. 2.

Novel Stop-cocks.

A SIMPLE stop-cock, in which the liquid to be drawn off comes in contact only with India-rubber and glass, may be constructed, according to J. Sobieczky, in the following manner:

A glass tube *A*, about eighteen millimeters (three-quarter inch) wide, is provided with a lateral branch *D*. Another smaller tube *C* is conically contracted at one end, and covered with a piece of India-rubber tubing *s*. *K* is a piece of cork fitted inside of tube *D*, and gliding easily to and fro upon tube *B*, which latter is connected with the reservoir containing the liquid, and the outer end of which is made somewhat flaring so as to fit exactly to the conical end of tube *C*. The cork *k* fits tightly on to *C*. If the faucet is to be opened, the outer tube *A* is pushed backwards, whereby the conical end of tube *C* sets free the orifice of *B*, and the liquid escapes through *D*.—*Zeitschr. f. Anal. Chem.*, 1883, 229.

A method even simpler than the above is taken from another German authority and illustrated in Fig. 2. The smaller tube having been closed at the end with the blow pipe, has an opening filed in its side. The two tubes are joined by a sleeve of pure rubber tubing, and when it is desired to arrest the flow of liquid, the inner tube is drawn out until the opening is covered by the rubber sleeve.

Khat, Cafta, or Arabian Tea.*

WITH the Arabs *Catha edulis* is a plant of some importance, inasmuch as it furnishes them with one of the necessities of life in every country, namely, tea. What the leaves of *Camellia Thea* are to us, those of *Catha edulis* are to them. The plant is of a shrubby nature, growing about ten feet high, with smooth, elliptical, serrate leaves, two or more inches long, and about an inch wide. They are peculiar in being arranged on some branches opposite to each other, and on others alternate. The flowers are small and white. The plant is largely cultivated in the interior of Arabia, mostly in gardens along with coffee. For the purposes of commerce, the twigs, with the leaves attached, are gathered and carefully dried; they are made up into closely pressed bundles of different sizes, the quality being known by the form and size of the bundles, the best of which are about a foot or fifteen inches long, and three inches wide; about forty slender twigs compose these bundles, which are tied together with strips of bark. The bundles are sent into Aden from the place of cultivation in the interior of Arabia in very large quantities, and sell at an average price for good quality of about two annas per bundle. The use of this tea in Arabia is said to antedate that of coffee; the effects of its use are described as similar to those of strong Chinese green tea. In consequence of its stimulating effects, khat was at one time classed by the people as an intoxicant; the use of intoxicating substances being forbidden by the Koran, this fell under condemnation. A synod of learned Mussulmans, however, made a decree that, as it neither injured the health, nor hindered the proper observance of religious duties, but simply increased good humor and hilarity, it was perfectly lawful to use it. Besides the use of the leaves in the preparation of a beverage, the Arabs also chew them both in the green and dried state, the effect of which is to increase the flow of hilarity or mirth, and to produce extreme wakefulness and watchfulness, so that a man may fulfil the duties of sentry all night without a feeling of drowsiness, an effect somewhat similar to that produced by cocoa. The plant is considered by the Arabs as an antidote to the plague, and they also say that infection cannot be contracted if a twig is carried about on the person. About three camel-loads are brought into Aden in the course of a year.

Determination of Total Tartaric Acid in Crude Tartar, etc.

EXACTLY 3 grams of the finely ground sample are mixed in a small beaker with 30 to 40 *cc.* water and 2 to 2.5 grams potassium carbonate, and boiled for ten to twenty minutes, constantly stirring. The acid potassium tartrate and the tartaric acid combined with calcium are thus converted into neutral potassium tartrate. The whole is introduced into a measuring cylinder or flask holding 100 *cc.*, cooled, made up to 100 *cc.*, shaken up, and after standing for some time, filtered through a dry filter into a dry flask, 50 *cc.* of the filtrate are then evaporated down to about 10 *cc.*, mixed with 2 *cc.* glacial acetic acid, and from 100 to 120 *cc.* of alcohol at not less than 95 per cent. To effect the complete separation of the bitartrate, the whole is well stirred for some time and after standing is filtered. The residue is washed with alcohol at 95 per cent until the washings which run off after dilution with water no longer show an acid reaction.

The moist precipitate, together with the filter, is returned to the capsule, stirred up with water, heated to a boil, and titrated with normal soda. The number of *cc.* consumed multiplied by ten gives the percentage of hydrated tartaric acid in the sample.—*Zeitschr. f. Anal. Chemie.*—*Chem. News.*

Kairine.—We are informed that Mr. M. J. Breitenbach (successor to Albert C. Dung), 61 Bowery, has received a supply of this new antipyretic.

* From the *Indian Agriculturist*. Reprinted from *Pharm. Journ.*, April 14th.

Beech-Nut Oil.

THE oil of beech kernels has lately been again drawn into use, in French practice, chiefly as a solvent for creasote (15 parts of creasote to 985 parts of the oil). As the amount of the oil annually produced is limited, adulterations of it are by no means uncommon. According to Henry Mayet (*Bulletin de Thér.*), beech-nut oil is particularly distinguished by its fine, golden-yellow color, and the color-reactions produced by adding 10 parts of a mixture of equal parts of sulphuric and nitric acid to 10 parts of the oil. At the point of contact of the two liquids, a currant-red color appears in the case of beech-nut oil; the color is orange with oil of poppies, lemon-yellow with oil of sesame, or of peanuts; and no coloration is produced with olive oil. On shaking the mixture, it does not change with beech-nut oil, but with oil of poppies it becomes orange-yellow, and brown with oil of sesame or peanuts. On adding 1 part of sulphuric and 1 part of hydrochloric acid gradually to 5 parts of the oil, an olive-green color is produced with beech-nut or olive oil, a chestnut-brown color with oil of peanuts, and a dirty-gray color with oil of poppies or of sesame. Beech-nut oil has the specific gravity 0.9,205–0.9,207, and becomes solid when cooled to 17° C. (= 1.4° F.).—*Pharm. Zeit.*

On Legen an East Indian Substance, containing Strychnine.*

IN the summer of 1882, Dr. Bettink, of Utrecht, received from a friend in the Dutch East Indies a bamboo box filled with grayish-black granules, which was a sample of a substance known in Java under the name *dendáng* or *légén*. The sample was accompanied by copies of papers on the natural history, physiological effects, and chemistry of the substance, written by J. Gronemann and E. Verschoof, and printed in the *Geneesk. Tijdschr. v. Ned. Indië* (deel x., afl. 6). Dr. Bettink communicates the most important portions of these papers and adds some statements of his own, which we give in abstract.

Légén or *dendáng*, which is sold in Java both as poison and as medicine, is said to be derived from a bug which is also called *dendang;* and *legen* is said by the Javanese to be the excrements of this bug.

Groneman who witnessed himself two cases of fatal poisoning by the substance, noticed symptoms which confirmed his previous suspicions that the poison must contain strychnine.

The bugs which were said to yield these strychnine-holding excrements were thereupon examined by him and found to belong to the family of the Cantharidæ (Blanchard), subgenus Lytta (Brullé).

The substance in question is described to occur in cylindrical pieces wrapped in palm-leaves; in most cases, the contents of these *roko's*—under which name they are brought from Borneo—are crushed. The bugs themselves appear to occur also on Java.

Verschoof analyzed the substance and found it to contain 12.47 per cent of strychnine, but no brucine. On examining the bugs themselves, an extract prepared from them was also found to contain *strychnine* [! ED. N. R.], but no cantharidin.

The peculiar shape of the pieces, the microscopic appearance, and the large percentage of sulphates which occurred in Dr. Bettink's sample, led him to doubt whether the substance was an excrement as alleged by the natives. Having only a small quantity of the substance, insufficient for a thorough examination, he applied to friends in Java for further samples, provided they could be obtained. It appears, namely, that the sale of legén is forbidden in Java, and the ordinance to this effect had been renewed on the occurrence of those cases of poisoning.

Meanwhile, Dr. B. received another sample from Mr. Gronemann, with a paper (printed in the *Geneesk. Tijdsch.*, 1882, 197, in which this author concludes that legén is *no* excrement. The bug appeared to him to be *Epicanta ruficeps* (Ill.), belonging to the group of cantharides, and also occurring in China and Japan. One of Mr. Gronemann's friends concluded, in view of the non-occurrence of uric acid and guanine in the substance, that it could not be an excrement.

The experiments which Gronemann undertook to ascertain whether the bugs were insensible to large quantities of strychnine proved that they could bear an amount of this poison, the four-thousandth part of which (in proportion to the weight of body of the bug to that of man), would have killed a man. Still this has no direct bearing on the occurrence of strychnine in the bugs, *as a natural constituent.*

The author being unable to obtain, for the present, any further supply of the substance, subjected the samples in his posession to a careful analysis. We quote only the results:

1. The absence of uric acid and guanine, the small amount of ammonia present, the microscopic examination, and the large amount of humic acid present seem to prove that legén is not an excrement.

2. The large percentage of ash, and particularly also of sulphuric acid seem to show that a sulphate (alum?) has been added during the preparation.

3. The substance from which the strychnine is derived are probably the seeds of some species of strychnos. It cannot be nux vomica, since no brucine is present.

* Abstract of a paper by Dr. H. Wefers Bettink in *Nieuw Tijdschrift voor de Pharmacie in Nederland*, June, 1883.

A French Observation on Cold Cream.

M. CAPDEVILLE (Aix), in the *Journal de Pharm. et de Chim.*, comments on the fact that if a basic or saline substance be added to cold cream (cerat de Galien) a part of the rosewater is at once separated. He has looked into the subject, and comes to this conclusion:—That the combination of the water in the cerate is affected by the water being first vaporized under the influence of the heat, the vapor then saponifying a part of the oil, and the resulting oleic and margaric acids combining with the water, the latter serving as a base. The separation of the water is thus easily accounted for, by recognizing that the substance causing that separation is a more powerful base than itself. M. Capdeville claims to have proved this theory by the following experiment:—Melting in a water-bath the ingredients of the cerat de Galien, 100 grams of white wax, 400 grams of oil of sweet almonds, and 150 grams of rosewater, he has withdrawn these from the fire. On cooling, the water separated, was filtered off, collected in a porcelain capsule, and evaporated. A syrupy residue resulted, in which tests showed clearly the presence of a small proportion of glycerin, which could only be explained by saponification.—*Chem. and Druggist.*

Pilocarpine as a Remedy for Fetid Foot-Sweat.

DR. ARMAINGAUD has used a hypodermic injection of pilocarpine in several cases of fetid foot-sweat with good results. The suppression of sweating about the feet, even when rapidly brought about by the use of this remedy, does not appear to affect the general organism injuriously. Whether the effect is permanent cannot be decided at present. Pilocarpine acts here by exciting a diverting secretion in the salivary glands; the sudorific effect, which is more readily obtained with jaborandi than with pilocarpine, does not appear to be able to replace the specially salivating effects of the latter.—*Pharm. Post.*

[Special attention may here also be directed to the difference in therapeutic effect between jaborandi and its alkaloid. Jaborandi is both a sudorific and saliva-increasing drug; the alkaloid pilocarpine, however, appears to possess the last-named property in much greater proportion, a fact which has been noticed by many careful observers. Probably some of the other principles contained in jaborandi, perhaps *jaborine* (compare NEW REM., 1880, 327 sqq.), are more energetic in the other direction].

On the Use of Methylated Alcohol in Liniment and Tincture of Iodine.

BY E. GREGORY.

My attention has been called* to the fact that Mr. Peter McEwan, of Edinburgh, had made a very interesting report concerning a sample of liniment of iodine,† which had exhibited extraordinary pungency. As I have had a slightly unpleasant experience with a somewhat similar compound, a few notes on the subject may not be out of place.

We have a market here for the tincture of iodine, made according to the U. S. P., which is a simple solution of iodine in alcohol. It is used only for external application.

Some time last summer, my clerk suggested that it might be made from methylated alcohol, and, contrary to usual custom, I consented to make trial of half a gallon. After preparation it was carefully examined, and it seemed as if the odor of methyl alcohol was entirely covered by that of of iodine, and in no other respect did it seem to differ from the same tincture made with ordinary alcohol. For a time all went well; but at the end of about a month, a patient complained that he could not use it on his knee, because "it burnt him and made his eyes smart when he was applying it." This complaint was disregarded; but soon there were more of the same kind, and we then concluded to withdraw it from general sale, and confine it to veterinary practice. Before this happened, however, a physician had got hold of some of the tincture, which he used in his gynecological practice, causing to his patients a few minutes of intense suffering, and three or four days' confinement to a recumbent position, from the very great soreness produced by the application.

I have just examined the last few ounces of this tincture, and on pouring out the liquid, the extremely pungent fumes filled the whole store, causing the eyes of both clerks and customers to water very freely. So pungent was it that, although the day was cold and blustering, we were compelled to open all the doors and thoroughly ventilate the place. At first I was inclined to think that the formation of a small quantity of iodide of methyl might account for the great pungency developed, but soon abandoned that theory, and had laid the matter over for further consideration and experiment.

I am now convinced that Mr. McEwan has struck the key-note when he suggests that allyl alcohol may be present which unites with the iodine to form some iodo-allyl compound. In conformation of this, it may be stated that the odor of the tincture was decidedly "garlicky," and the effect upon the nose and eyes very similar to that of oil of mustard, but more powerful.

Mr. McEwan states that he prepared some iodine liniment, omitting the camphor, and found that the pungency was not produced, arguing from this experiment that the camphor had in some way influenced the development of pungency. It will be seen, however, that my experience establishes the fact that camphor has nothing to do with the reaction.

In view of the above facts, it would be interesting to inquire if a certain brand of "Crystal Methyl" has entered, to any extent, into the composition of tinctures and other pharmaceutical preparations, and what the chemical and therapeutical results of such a course are likely to be. It is well known that it has been much pushed and recommended as having scarcely any more odor than ordinary alcohol.

Should time and opportunity be afforded me, I will endeavor to follow up this subject by such experiments as the busy avocations and slender resources of a country pharmacy will permit.—*Canad. Journ. of Pharm.*

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* By a short article in *Canad. Jour. of Pharm.* for Feb.

† *Linimentum Iodi, Liniment of Iodine*, Brit. Ph., is prepared from:

Iodine	1¼ ounce.
Iodide of potassium	½ "
Camphor	½ "
Rectified spirit	10 fluid ounces.

Cleansing Glass Vessels.

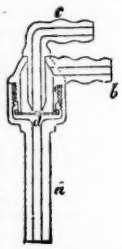
Alexander Müller, of Berlin, after speaking of the various methods in vogue for cleaning glass vessels as, for example, sand (which is objectionable, as it scratches glass), shot (good, but should be followed by a wash of dilute nitric acid, to get rid of lead), brushes, copper scale (also good, but requires subsequent rinsing with some dilute acid), bits of paper or linen, wood ashes, salt (especially rock-salt), gypsum, and marble-dust (very good), ground bones (likewise excellent), he concludes as follows: Chisel or tongue-shaped pieces are cut from thick pieces of India-rubber, and a sharp brass or platinum wire is fixed into the thick end to serve as a handle. With this washer and its flexible handle, we are able to "lick" out, to a certain extent, any kind of a bottle. For beakers and capsules, I greatly prefer it to the hair pencil and feather commonly used; for, owing to their fibrous structure, the precipitate gets entangled in them, while they also lose some of their nitrogenous particles, which would affect the accuracy of careful nitrogen determinations as, for example, in water analyses.

Finally, to clean glass or porcelain vessels from the greatest variety of adherent organic substances, he recommends a mixture of bichromate of potassium and sulphuric acid as superior to ether, alcohol, benzin, etc.—*Druggist's Circular.*

An Improvement of the Drying Oven.

Edward Seelig has communicated a method of preventing the loss of water, from evaporation, in drying ovens; and of confining the consumption of gas, at the same time, to the smallest possible quantity.

The outer shell of the drying oven must have only *one* exit, communicating with the water space between the walls. Into this opening, the apparatus shown in the illustration is firmly fastened by means of a perforated stopper surrounding the leg *a*. The lateral branch *b* communicated with the source of gas, and the branch *c* is connected with the burner under the drying oven. The tube *a* is expanded above, and closed by a rubber membrane *d*. This prevents, in the first place, loss of the water by evaporation. As soon as the tension of the steam in the apparatus has become higher than it was at the time of adjusting the apparatus, the membrane bulges upwards, closes the outlet of tube *c*, and thereby diminishes the supply of gas to the burner. The total extinguishment of the flame is prevented by a scant supply of gas reaching the burner through a small lateral opening in the inner leg of *c*.



It will be readily seen that, if the apparatus is adjusted at the time when the water has actually reached the boiling point, it may be kept for any length of time at the temperature of boiling water without having to renew the latter.—*Zeitsch. f. Anal Chem.*, 1883, 239.

Shaving Soap.

To produce a good shaving soap by the cold process, W. Kürsten furnishes the *Seifensieder Zeitung* the following formula: Melt 40 kg. of white tallow with 20 kg. Cochin cocoanut-oil at a temperature of 45° C., to which add by constant stirring 34 kg. of a 30 per cent solution of caustic soda and 6 kg. of a 30 per cent solution of caustic potash. Continue to stir for about 15 or 20 minutes, until the whole forms a uniform mass, which is indicated by the formation of a fine, skin-like covering on the surface of the mass. Finally add 200 gm. oil of caraway, 250 gm. oil bergamot, 120 gm. oil thyme, and 120 gm. oil lavender to impart a perfume. This soap has a white color and an agreeable scent, containing no free alkali, and gives an abundant and lasting lather.

Extract of Vanilla.

THE EDITOR of the *Pharmaceutical Record* says he has for many years made an extract of vanilla which has given perfect satisfaction to all who have ever tried the formula. The great complaint made by consumers is its inferior quality and strength, and as furnished by nearly all manufacturers, and by a large proportion of druggists there is just ground for the complaint. A prime quality of Mexican vanilla should always be selected, and no tonka beans should ever be used with it. The following has been the mode of procedure:

Vanilla beans, cut very fine..... four ounces.
Cologne spirits,
Water..... equal parts.

Put the vanilla finely-cut in a flask (or other suitable vessel that can be closed *nearly* tight) with two pints of the diluted cologne spirits and, by a water-bath, *heat the contents of the flask nearly to the boiling-point* for one hour. Pour off the fluid, add one pint of the dilute spirit, again heat for one hour, and repeat it a third time, pouring off as much as possible of the fluid. Turn the dregs of the vanilla into a glass funnel, which has a plug of cotton loosely put in the neck, and add slowly to it enough dilute spirits to obtain in all four pints. Mix all together, and filter. By this method, in five or six hours as fine as an extract of vanilla can be made as by the more tedious process of percolation.

On the Specific Gravity of Concentrated Sulphuric Acid.

THE relation between specific gravity and percentage of absolute acid, in the case of sulphuric acid, formed one of the subjects of extended discussion during the last revision of the U. S. Pharm. A special committee of the National Academy of Sciences is at present also engaged with the examination of a similar question, namely the establishment of a reliable scale and a report on the feasibility of abolishing Baumé's scale altogether or at least adopting a fixed scientific basis for it.

During the examination of the various tables of the strength of sulphuric acid by the Committee of Revision, it became evident that the tables heretofore usually relied on (Ure's, etc.) were entirely unreliable. The only one which was based on elaborate, scientific experiment was that constructed by Kolb of Mühlhausen. And this was the table finally selected. To demonstrate the relative coincidence or divergence of the different tables, the writer of this article constructed for the Committee of Revision a series of curves, on one and the same table, in which the specific gravities were entered upon the ordinate—and the percentages upon the absciss-axis. While the curves for the weaker acid often coincided, they began to diverge more and more as the strength of the acid increased, the only one which remained somewhat in harmony with Kolb's being that of Bineau. The curve is quite normal—with the exception of a few points which probably mark definite hydrates—until a strength of about 88 per cent is reached, when it begins to ascend rapidly so that there is but little difference of specific gravity for the highest strength of acid left.

Kolb's table, unfortunately, omits the very section of the curve involved in this rapid increase, inasmuch as he gives no specific gravity or percentage between 1.819 (89.7%) and 1.842 (100%).

Professor G. Lunge, of Zürich, and Mr. P. Naef, have lately made a renewed investigation of this subject, under observance of all precautions and corrections insuring a reliable result. The thorough familiarity of Prof. Lunge with this subject renders his contribution particularly valuable, as it probably settles the question permanently.

Prof. Lunge and Mr. Naef find that Kolb's figures coincide, below 90%, with the values found by themselves so closely that they may be regarded as practically correct. Two observations were, however, made which are of importance. Kolb namely states that he succeeded, by careful repeated distillation, in obtaining an acid containing 99.72 per cent of sulphuric anhydride. No other chemist had, before him, succeeded in this, and even Lunge and Naef could not obtain, by the most careful evaporation in vacuo, a stronger acid (as *residue*) than 98.57 per cent. Further is was shown that the specific gravity of the latter acid (98.57%) as obtained by evaporation agreed almost absolutely (within 0.0003) with an acid prepared by mixing the calculated quantity of anhydrous sulphuric acid with a somewhat weaker acid; and that an acid of the latter kind (that is, one containing an excess of SO_3) as well as an acid approaching 100 per cent has a *lower* specific gravity than a somewhat weaker acid, which observation confirms similar ones already made by F. and W. Kohlrausch.

The utility of Kolb's table being somewhat impaired by the absence of any data for the strongest sulphuric acid, Lunge and Naef have now filled out the gap by the construction of the following table, the last column of which gives the spec. grav. and degrees by Baumé's scale of a commercial acid made at Uetikon on the lake of Zürich:

Table of Percentage and Specific Gravity of the Strongest Sulphuric Acid at 15° C. (59° F.), reduced to Water at 4° C. and a Vacuum.

PERCENTAGE H_2SO_4	PURE ACID	COMMERCIAL ACID (Uetikon)	
	SPEC. GRAV.	SPEC. GRAV.	BAUMÉ
90	1.8185	1.8202	65.1°
* 90.20	1.8195		
* 90.29		1.8219	
91	1.8241	1.8254	65.4
* 91.48	1.8271		
92	1.8294	1.8306	65.6
* 92.83	1.8334		
93	1.8339	1.8346	65.8
94	1.8372	1.8374	65.9
* 94.09		1.8375	
* 94.84	1.8387		
95	1.8390	1.8397	66
* 95.26		1.8404	66
* 95.97	1.8406		
96	1.8406		
97	1.8410		
* 97.70	1.8413		
97.75		1.8464†	66.2
98	1.8412		
* 98.39	1.8406‡		
* 98.66	1.8409§		
99	1.8403		
* 99.47	1.8395		
*100	1.8384		

Below 90%, Kolb's table may be used unhesitatingly for commercial acids.—From *Die Chem. Industrie*, 1883, 37.

Pheno-Resorcin.

THIS name has been given by F. Reverdin to a mixture prepared by melting together—

Carbolic acid.....67 parts.
Resorcin .....33 "

and finally adding 10 parts of water. It then remains liquid and has the advantage of being soluble in water *in all proportions*. The two substances are analogous in properties, and may therefore well be combined.—*La Ruche Pharm.*

* These figures were directly determined; the others by graphic interpolation.
† Acid prepared, at Griesheim, by direct evaporation on a large scale.
‡ Prepared by mixing ordinary strong acid with anhydride.
§ Prepared by direct evaporation of ordinary strong acid.

Insecticide for Plants.

Soft soap	4 parts.
Tobacco	6 "
Fusel oil	5 "
Methylic alcohol	20 "
Water	sufficient to make 1,000 "

Boil the tobacco with an equal weight of water for half an hour, replacing the water as it is dissipated on boiling. Then strain. Mix this liquid extract with the other ingredients, and add enough water to make 1,000 parts.

Before use, the mixture is well shaken up, and then applied by means of a syringe throwing a fine spray to the affected plants.—After *The Chem. Journ.*

A rather dilute infusion of tobacco alone is likewise very effective for this purpose.

Compound Syrup of Wild Cherry.

F. H. HAZELTON (Bridgton, Me.), in answer to an inquirer, suggests that the preparation may be the following:

Fluid extract of wild cherry	2½ fl. ounces.
" " " ipecac	½ "
" " " blood root	½ "
Sulphate of morphine	8 grains.
Tartar emetic	2 "
Simple syrup, sufficient to make	1 pint.

The same correspondent says that a syrup claimed to be made according to the foregoing formula is extensively sold and prescribed in the State of Maine.

Citrate of Magnesia.

THE following formula is recommended by B. Kondratowisch in the *Pharm. Zeitsch. f. Russl.*

Dissolve 5 ounces of citric acid and 1½ ounces of calcined magnesia in 8 pounds of water, and filter; then add 14 ounces of syrup and 6 drops of citric acid, previously triturated with ¼ ounce of sugar. Distribute the whole into 9 bottles, and finally add to each 50 grains of bicarbonate of sodium and 20 grains of citric acid in as few crystals as possible. Cork quickly, and tie.

New Use of Chloral.

B. BONATTI recommends the following mixture as an easily administered, prompt and certain drastic purgative:

℞ Infusi sennæ	300.0 gms.	=	10 fl. oz.
Chloral	1.5 to 3.0 "		24 to 45 grs.
Syrupi	30.0 "		1 fl. oz.

The infusion of senna is to be prepared from 90 grs. (increasing, if necessary to 180 grs.) of senna leaves. The author states that he obtained results with this mixture, after jalap and croton oil had failed to act.—*D. Med. Zeit.*

Attaching Labels to Tin, Zinc, or Glass.

WATER-GLASS (solution of silicate of soda) is recommended as a very good adhesive for this purpose, particularly if the articles are subsequently liable of being exposed to heat. Metallic surfaces should first be rubbed with emery paper before applying the paste; the label is then pressed on with the hand.—*Drog. Zeit.*

Polychrom-Lacquer for Tin Ware.

FOR those of our readers who have occasion to put up goods in tin-cans or boxes, and who would like to give them a pleasing exterior, besides completely protecting them against rust, the following process, proposed by C. Puscher, may be of interest:

30 parts of crystallized acetate of copper are rubbed to a fine powder in a mortar, then spread out in a very thin layer upon porcelain, and kept for a few days in a moderately warm place, whereby the water of crystallization and a large portion of the acetic acid will be dissipated. The residuary, bright-brown, light powder is then again rubbed up with addition of a little oil of turpentine, and finally mixed, under continued stirring, with 100 parts of fine copal varnish heated to 167° F. If the copper salt has been very finely levigated, it will be dissolved, on stirring, in perhaps fifteen minutes. The varnish is now poured into a glass and set aside, for a few days, in a warm place, being occasionally shaken up. Any small, undissolved residue of oxide of copper may be utilized at the next operation.

This dark-green varnish, when applied four or five times to tinned iron, imparts to it a fine green, lustrous color. But if heat be used, only two coats are necessary to produce various colored tints, according to the temperature to which the articles are exposed. They may be heated either in an oven or on an equally heated iron-plate, and the tints produced are, successively, greenish, yellow, dark-yellow, orange or reddish-brown. The colors are brilliant and lustrous, and have the additional advantage of resisting the action of light. If the copal varnish was of good quality, the tins may even be hammered without losing their lacquer. Success depends greatly upon a uniform application of the varnish and of the subsequent heat.—*Neueste Erfind. und Erfahr.*, 1883, 212.

Eau-de-Cologne, Double.

Oil of petit grain	42 grams.
" " neroli	35 "
" " bergamot	32 "
" " Portugal	32 "
" " rosemary	30 "
" " lavender	30 "
" " orange	30 "
Jasmin water	60 "
Orange-flower water	60 "
Deodorized alcohol	10 pounds.

Dissolve the oils in the alcohol; then add the waters. Allow the mixture to stand fourteen days, and distil. Transfer the distillate to bottles, and let it stand for at least nine months before using it.—F. EICHMANN in *Der Seifenfabrikant.*

The same author also gives the following series of recipes for making plain

Eau de Cologne.

	1	2	3	4	5	6
Oil of bergamot *gms.*	240	16	40	130	17	100
" " lemon "	80	32	..	30	41	16
" " neroli "	20	16	80	25	25	8
" " rosemary "	5	4	40	25	8	..
" " lavender "	5	40	..	15	..	8
" " orange (port.) "	..	32	..	30	41	..
" " orange (big.) "	..	..	..	30	..	..
" " petit grain "	..	5	..	..	8	..
" " thyme "	..	..	..	1	..	..
" " melisse "	..	..	..	..	..	16
Essence of orange peel "	..	..	40	..	..	..
" " lemon peel "	..	..	100	..	..	..
Orange-flower water *lb.*	..	¾	..	½	..	..
Acetic ether *gms.*	40	..	..	..	..	..
Deodorized alcohol *lb.*	10	10	10	10	10	10

Eau Dentifrice (Dr. Pierre's, Paris).

IN reply to a query in the *Pharmac. Zeitung*, Mr. Ad. Vomácka states that this nostrum owes its peculiar flavor to cedar-wood. A tincture is prepared from 1 part of cedar-wood shavings or chips (such as may be obtained in lead-pencil works) and five parts of strong alcohol. This tincture is then flavored with a mixture of equal parts of oil of anise and of peppermint.

Another correspondent asserts that it prepared by macerating 15 parts of star anise seed in 200 parts of alcohol, adding 60 drops of oil of peppermint to the mixture, and coloring with aniline red.

Blackberry Cordial.

Dried blackberries.....16 ounces troy.
Or fresh blackberries..... 4 pints.
Powdered blackberry root .....12 ounces.
Powdered mace.....1½ "
Powdered cassia..... 9 drachms.
Powdered allspice and cloves, of each..... 5 "
Sugar .....60 ounces troy.
Brandy..... 2 pints.
Port wine..... 1½ "
Alcohol..... 1 pint.
Water .....q. s.

Soak the berries, if dry, in *q. s.* of water, and express, and repeat until 6½ pints of juice are obtained. If the berries are fresh, express the juice, and mix water with residue, to wash out all juice; then add water to make it measure 6½ pints. Mix the spirit with the 6½ pints of juice; moisten the powders with this mixture, and pack in a percolator. Allow it to drain, and pour on water until percolate measures 10 pints; then add the sugar, dissolve, and, if necessary, filter.—*The Pharmacist.*

Brown's Troches.

Extract of licorice, powdered..... 2 drachms.
Sugar, powdered..... 3 ounces.
Cubebs, powdered,
Acacia, powdered, each.....½ ounce.
Fluid extract of conium .....½ "

Beat into a thick paste, and cut into lozenges.

(This is said to be the formula, according to *The Pharmacist.*)

Plastic Dressing.

ACCORDING to *Dingler's Polyt. Journ.*, Dr. Vogel proposes to employ in surgical practice, in place of the plaster of Paris dressing, a tissue saturated with a hot mixture of asphalt, rosin, and coal-tar. This is rigid when cold and may be rendered pliable by immersion in hot water.—*Pharm. Post.*

Bestucheff's Tincture of Iron.

FOR this preparation which is also used to some extent in this country, Fuss gives the following simplified formula:

Solution of chloride of iron (Ph. Germ.).100 parts
Absolute alcohol. .....400 "
Ether.... .....150 "

[In order to prepare the 100 parts of the above solution of chloride of iron, Ph. Germ., which has a spec. grav. of 1.280 to 1.282, take 77 parts of the liquor ferri chlor. U. S. Pharm., and dilute it with water to 100 parts.]

The resulting liquid is deep-yellow, clear and deposits no sediment. It must be kept in glass-stoppered vials.—*Pharm. Rundsch.* (*Leitmeritz*), vol. xi., 301.

Tamar Indien.

THE *Union Pharm.* has published the following formula for an imitation of this popular medicine:

Tamarind pulp.....450 gms.
Powdered sugar ..... 40 "
Powdered sugar of milk..... 60 "
Pure glycerin..... 50 "

Mix and evaporate in a water-bath to the consistence of a soft extract, and add

Powdered senna leaves.....50 gms.
Powdered aniseed .....10 "
Essence of lemon.. ..... 3 "
Tartaric acid..... 3 "

Mix well, and divide into 100 boluses. These, after exposure to steam, are rolled in the following mixture:

Cream of tartar ..... 5 gms.
White sugar, sugar of milk, of each.... .35 "
Tragacanth powder ..... 3 "
Tartaric acid ..... 2 "
Red saunders, powdered. ..... .25 "

Dry and wrap in tinfoil.—*Chem. and Drugg.*, April, 1883.

Hop Cordial.

THE following is recommended as a palatable preparation, not inferior to many of the so-called "Hop-Bitters":

Hops ..... 2 oz.
Dandelion..... 2 "
Gentian ..... 2 "
Chamomile ..... 2 "
Stillingia ..... 2 "
Orange peel... ..... 2 "
Alcohol, water, of each,.... .....77 fl. oz.
Syrup, simple.. .....12 " "

Exhaust the solids with the alcohol and water, and add the syrup.—*Pop. Science News.*

J. Wickersheimer's Wine-Preserving Liquid.

ACCORDING to a report of Dr. J. Moritz (in *Chemiker Zeit.*, No. 29), the preparation sold in the market under the title: "J Wickersheimer's Weinconservirungs-Flüssigkeit," and which is put up in two separate vials, consists of a 10-per-cent alcoholic solution of salicylic acid in one vial, and a solution of boracic acid in glycerin in the other. The accompanying directions prescribe to mix 37 cubic-centimeters of the first-named solution ("Solution A") with 63 cubic-centimeters of the second ("Solution B"), and to add this to 100 liters (26½ gall.) of the wine. Each quart, therefore, will contain about ⅜ grain of salicylic acid, which quantity is certainly entirely harmless.

Solution of Chloride of Iron.

MR. C. W. WEISE, of Berlin, writes to the *Pharmaceutische Zeitung* that he has been led, through the annoyance caused by the fumes of acid when following the official process for making Liquor Ferri Chloridi, to abandon the use of acids and to substitute for it a current of chlorine gas.

For this purpose it is only necessary to observe the following precautions: The solution of ferrous chloride is diluted with two parts of water, transferred to a capacious, colored (amber-colored) bottle, and a current of washed clorine, derived from a *cold* mixture of manganese dioxide and hydrochloric acid, passed into the solution until a small portion, tested with ferricyanide of potassium, no longer shows the presence of ferrous salt. The solution is then evaporated on the water-bath, in order to remove the excess of chlorine, and brought to the proper specific gravity. It should be observed that it is highly advantageous to have the chlorine delivered from a *cold* mixture of the ingredients, since this prevents the aspiration of the solution into the chlorine apparatus, and further, since the slow evolution of gas facilitates its total absorption.

The author also remarks that the solution should be carefully kept from the light, since even reflected sun-light exerts a reducing action upon the solution.

Indelible Ink without Silver.

To a concentrated aqueous solution of chloride of copper add solution of caustic potash as long as a precipitate is produced. Allow to settle, decant or siphon off the supernatant liquid and dissolve the precipitate in the least possible quantity of water of ammonia. Finally add about 6 per cent of dextrin. After the writing made with this ink is dry, it must be gone over with a hot iron before being washed.—After *Drug. Circ.*

Laville's Rheumatic Mixture (Gichtmixtur) is said to be composed of—

Quinine sulph ..... 0.5 gm.
Cinchonine sulph..... 0.5 "
Colocynthin..... 0.25 "
Calcium salts ..... 0.45 "
Coloring matter..... 0.3 "
Water..... 8.5 "
Alcohol..... 10. "
Port wine.....80. "

—*Ind. Blätter.*

Cantharidin and its Uses.

E. DIETRICH, manufacturer of plasters, dressings, etc., in Helfenberg, advocates the abandonment of cantharides as an ingredient in blistering tissues and the employment in its place, of the active principle cantharidin.

The best solvent for this principle is formic acid, which itself occurs in cantharides; the stronger the acid the greater is its solvent action.

If cantharidin is to be dissolved in collodion, oil, or the mass of a plaster, it is advisable to rub it first to a very smooth paste with oil. In this shape it is soluble in collodion by mere shaking; in oil and plaster it dissolves on being heated for half an hour to 80° C. (176° F.).

Cantharidal Collodium.

Cantharidin	1/20 gr.
Collodion	15 grs.
Rape oil (as coloring)	3/4 gr.

Ordinary Cantharidal Plaster.

Cantharidin	1/10 gr.
Suet	3 grs.
Yellow wax	12 "
Turpentine	3 "

Perpetual Cantharidal Plaster.

Cantharidin	1/64 gr.
Resin	10 grs.
Yellow wax	8 "
Turpentine	5 "
Suet	3 "
Euphorbium, powd.	1 gr.

Cantharidal Oil.

Cantharidin	1/20 gr.
Rape oil	15 grs.

Cantharidal Ointment.

Cantharidin	1/8 gr.
Yellow wax	45 grs.
Olive oil	100 "

Unguentum Acre.

Cantharidin	1/32 gr.
Yellow wax	1½ "
Resin	3 grs.
Turpentine	6 "
Lard	20 "
Euphorbium, powd.	1 "

In all these cases the relation of cantharidin to Spanish flies is ample, about 1 to 200. In the case of some preparations, as the oil and ointment, loss is occasioned by heat, but this loss is made up by a proportionately larger quantity. —After *Pharm. Zeitschr. f. Russl.*

Odontine (for cleaning the teeth).

Soap, Castile	15 parts.
Sugar, in fine powder	15 "
Gum Arabic, in fine powder	2 "
Oxide of iron	2 "
Oil of peppermint	2 "
Glycerin	8 "
Water	8 "
Talc	30 "

Make into a uniform mixture. — After *Seifenfabr.*, 17, 197.

Ointment for Preparing Animal Skins.

ONE HUNDRED and twenty-five parts of colocynth and 25 parts of aloes are to be boiled with 1,500 parts of water to one-half, and the liquid filtered while hot. In another vessel, 500 parts of brown resin-soap and 250 parts of soft soap are made to a thin paste with water, with the aid of a gentle heat. To this mixture is then added the former, and besides 125 parts of glycerin and 40 of rape oil. 50 parts of naphthalin having previously been triturated to a fine powder with 35 parts of oil of turpentine, and 80 parts of liquefied carbolic acid, are finally added, and the whole well mixed so as to form a homogeneous mass, which may be easily rubbed in. If too thick, it may be diluted with oil of turpentir Being less poisonous than arsenic ointment, the abc - preparation would seem to deserve the preference.—*Rundschau, Leitmeritz.*

Maccassar Hair-Oil.

1. Digest 2 lbs. of finest olive oil for several days, in a warm place, with 2½ oz. of cut alkanet root (or with 75 grs. of alkannin). Then filter through paper and add a mixture of 24 grs. of oil of lemon, 15 grs. oil of cinnamon, 6 drops oil of rose, and 15 grs. of oil of cloves.

2. Or, prepare the colored olive oil as above, and add to it 15 grs. each of oil of cinnamon and cloves, 24 grs. of oil of melisse, 75 grs. oil of bergamot, and 3 drops of oil of rose.—*Seifenfabrikant.*

Unalterable Syrup of Iodide of Iron.

ACCORDING to Izard, syrup of iodide of iron may be preserved for a long time with its original green color, if a few drops of alcohol are added during the process, as soon as the iron and iodine have combined. Izard explains this preservative action by the partial withdrawal of hydrogen from the alcohol, whereby aldehyde is formed. The liberated hydrogen reduces any oxide of iron that may have ormed.—*Bull. de la Soc. de Ph. du Sud-Ouest*

Preparation of Powdered Meat.

REBER gives the following directions for preparing this article of invalid food, which is now used with considerable success in the superalimentation (or forced alimentation) of consumptives.

Lean beef is finely chopped, then boiled for 15 to 30 minutes in a well-covered or tightly closed vessel on a steam bath and, while still hot, strongly pressed. The cake, thus freed from fat and juice, is completely dried at between 90° and 100° C. (194° to 212° F.), and powdered. The liquid previously expressed is allowed to cool, the separated fat removed, then evaporated and dried as much as possible. But, since the residue is very hygroscopic, it cannot be powdered alone, but is mixed with rice- or pea-flour, then powdered, and finally mixed with the powdered meat. Thus prepared the product contains all the constituents of the beef excepting the fat. Besides, it has a very pleasant odor of roasted meat. It costs about one-quarter more than the beef itself.—*Pharm. Centralh.*, and *Rundschau, Leitmeritz.*

Soluble Extract of Ginger.

MIX one pint of fluid extract of ginger with two pints of water, shake occasionally for twenty-four hours with two ounces of carbonate of magnesia in fine powder, transfer to a filter previously moistened with water, and pour the filtrate back into the filter until it comes quite clear. Then evaporate to half a pint, and add half a pint of alcohol.

The *rationale* of the process is as follows: Ginger contains three distinct kinds of principles. (1.) Gummy matters soluble in water and insoluble in alcohol. (2.) Resins soluble in alcohol and insoluble in water. (3.) A pungent, aromatic extractive constituting the taste and flavor of the drug, which is soluble both in water and alcohol. In making the officinal fluid extract of ginger, the root is exhausted with strong alcohol, which leaves behind all the objectionable gummy matters, but dissolves the resinous constituents. These seem to be relatively inert, and are the cause of the turbidity apparent when fluid extract of ginger is added to syrup. They are removed by the treatment with magnesia and water. When the soluble extract is to be used for flavoring, the filtrate needs no concentration, as it will keep very well as it is. All that is necessary is to take into account its relative strength whenever it is to be employed instead of the officinal fluid extract.

NOTES, QUERIES AND ANSWERS.

Under this heading we shall, to the best of our ability, endeavor to answer such questions addressed to us, as come within the scope of this journal, provided they are accompanied by the name and address of the writer. Answers to queries received after the 5th of the month will lie over until the next issue. Unless special instructions to the contrary accompany the query, the initials of the correspondent will be quoted at the head of each answer.

When asking for the formula of an unusual, patented, or proprietary compound, always accompany the query with any information you may already possess regarding the locality in which it is used, its use and reputed effects, in order to enable us to make inquiry without waste of time and labor. When it can conveniently be done, send also a specimen of the label used on packages of the compound.

No. 1,129.—**Universal Putz Pomade** (see query 1,121).

A correspondent in Scranton, Pa., writes us that this consists of Armenian bole and oleic acid enough to form a paste, and nitrobenzol sufficient to give the desired odor. He adds that the cleansing effect is largely due to the oleic acid.

N. W. Y., of Lafayette, Ind., in reply to the same query, says that:

Rotten stone (levigated).....1 part
Iron subcarbonate.....3 parts
Lard or olive-oil.....sufficient

to make the finished product the consistence of lard, and to this add sufficient oil of bitter almonds to perfume.

This produces a preparation very similar if not identical to "Putz Pomade."

No. 1,130.—**Indelible Marking Ink** (Courtlandt).

The following will probably best answer your purpose:

Mix intimately 8 parts of cinnabar (red sulphide of mercury) and 1 part of sulphate of iron (ferrous sulphate), and triturate the mixture thoroughly with enough boiled linseed oil to make a thin paste.

This is applied to the fabric in the usual manner. It may be used before the stuff is bleached, as the marks will remain unaffected by the bleaching process.

For marking fabrics after bleaching, you may use a mixture prepared by triturating chrome-green or Prussian-blue with boiled linseed oil.

No. 1,131.—**Steam Vaporizer** (Correspondent).

In our December number for 1882 we published a description, with cut, of a steam-vaporizer, which elicited several inquiries from some of our readers. The apparatus had been described in the *Neueste Erfindungen und Erfahrungen*, but we had omitted, by oversight, to quote the source. Just now we see that an almost identical apparatus, differing only by throwing the vapor upwards, has been put on the market by Ludwig Heinrici, of Zwickau, which may be used either for disinfecting or for perfuming. It is so constructed that the vaporizing nozzle may be unscrewed, and replaced by a special attachment permitting its use for the inhalation of medicated vapors.

No. 1,132.—**Concentrated Solutions** (Dispenser).

We believe it was Fletcher, of London, who first brought out a series of concentrated solutions for the rapid and extemporaneous preparation of various syrups. His example has, since then, been followed by manufacturers elsewhere. We have no doubt that these time-saving preparations will come much more into vogue the better they are known, provided only that they are uniformly made of a standard strength and will be found to have good keeping qualities. Among those which are most in use, the following may be mentioned:

Liquor calcii hypophosphitis.
Liquor calcii lactophosphatis.
Liquor ferri bromidi.
Liquor ferri, quiniæ et strychniæ phosph.
" hyphophosphitum co.
" ferri iodidi.

Formulæ for one or the other of the above solutions will be published by us in the near future.

No. 1,133.—**Sulphocyanide of Ammonium** (J. S. & Co.).

The most advantageous method of preparing this salt is that of Claus, who prepares it by acting with a mixture of alcohol and solution of ammonia upon disulphide of carbon. He directed the following proportions: 3,000 parts of concentrated solution of ammonia, 3,000 parts of alcohol, and 700–800 parts of carbon disulphide. The mixture is to be set aside for several days, then distilled to one-third, and the residuary, now colorless liquid filtered while still hot. On cooling, the salt crystallizes out.

Quite recently Julius Schultze has found that Claus has given much larger proportions of alcohol and ammonia than are necessary for the decomposion of 700–800 parts of the disulphide. He finds that for this latter quantity there are only required 1,200 parts of 95% alcohol, and 1,600 parts of water of ammonia of spec. grav. of 0.912. The product is uniformly 560 parts of sulphocyanide of ammonium.

Among other uses, it is employed as a most sensitive test for ferric salts, with which it strikes a blood-red color, while no color is produced in solutions of ferrous salts.

No. 1,134.—**Wine Tannin** (Catawba).

Red wine contains a peculiar kind of tannin, which has been called "œnotannin." This exists in the skins of all grapes, both white and red, but is generally found only in red wines, since this is made by allowing the grape-juice to ferment in presence of their skins, while white wine is prepared from the juice separated from the skins. According to Gautier, the œnotannin may be separated by neutralizing the wine exactly with soda, precipitating the coloring matter with chloride of sodium, and then digesting the decolorized liquid with freshly precipitated carbonate of copper. The copper precipitate is finally decomposed by hydrosulphuric acid, and the filtered liquid evaporated. It is obtained in form of colorless, crystalline scales, soluble in water, alcohol, or ether, and yielding with ferric salts a bottle-green precipitate.

No. 1,135.—**Elixir of Malt and Iron** (E. S. A).

A preparation containing malt and iron, in form of an elixir, has occasionally been used in private practice in this city. There is a preparation on the market entitled "Malt, Wine and Iron," probably named in analogy to "Beef, Wine and Iron," but we are unable to give its exact composition.

We have, for some time past, prepared the above-mentioned elixir for the use of certain physicians, and have used the following formula:

Extract of malt ..... 8 fl. ℥
Phosphate of iron (U. S. P., 1882).....128 grs.
Simple elixir.....sufficient to make 24 fl. ℥
Water..... q.s.

Dissolve the phosphate of iron in a small quantity of hot water and add the solution to the extract of malt. Then add enough elixir to make 32 fl. oz.

Mix about 2 drachms of calcined magnesia with the elixir, and filter it through paper. In filtering this elixir, it is best to line the inside of the funnel with a layer of clean tow or cotton before putting in the filter, as the stickiness of the elixir would soon clog the pores of the filter. With this precaution, however, it runs off quite freely.

The extract of malt should be pale, and have been carefully prepared in vacuo.

No. 1,136.—**Copying Ink** (H. E. F.).

The nigrosine ink recommended by us as the best black ink, and a formula for which we gave in our last January number, page 27, cannot be made into a copying ink for the reason that it is insoluble, or practically so, in water as soon as it has become dry on the paper. This is the very opposite of a copying ink. The latter usually dries slowly, or even if it dries rapidly, it at least remains soluble so that a moist sheet of blotting paper pressed against it will take up a complete copy of the writing.

Nigrosine ink may, however, be used for copying, if the gelatin and bichromate are omitted. The following will be good proportions:

Nigrosine	100 grains
Water	6¼ fl. oz.
Glycerin	3¾ fl. oz.

A better copying ink is obtained by reducing any good iron ink by evaporation and adding some glycerin:

Black iron ink	10 volumes
Redute by evaporation to	6 "

and add

Glycerin	4

Another good copying ink which is said to yield from three to five good impressions, is prepared, according to Böttger, as follows:

Extract of logwood	64 parts
Soda	10 "
Chromate of potassium	2 "
Glycerin	64 "
Gum arabic	16 "
Water	270 "

Dissolve the extract of logwood, together with the soda in the water, add the glycerin and gum arabic, and finally add the chromate (*not* bichromate) of potassium dissolved in a very small quantity of boiling water. The ink may be used at once.

No. 1,137.—**Boroglycerides** (C. A. P.).

Some manufacturers sell a boroglyceride of sodium, or of calcium, as for instance, E. Merck of Darmstadt. Both of these have been recommended as highly antiseptic, and will undoubtedly replace carbolic acid in many cases where the preservative agent is required to be odorless and non-poisonous. Both of the above-mentioned preparations appear in form of colorless or faintly colored glassy masses, hygroscopic and therefore easily soluble in water, of which they require about an equal volume. How "boroglyceride" is made, has been detailed at length in this JOURNAL, 1882, p. 165; 346; 1883, p. 28. Boroglyceride is understood to be a chemical compound of boric acid and glycerin. Whether this compound can enter into a true chemical combination with metals (sodium, calcium, zinc, etc.), is not known for certain, nor has the process of preparing these metallic boroglycerides been published, so far as we are aware. However, we presume that they are made in a manner analogous to the boroglyceride itself, namely by heating the corresponding borates with glycerin.

A compound of boroglyceride and zinc, however—such as has been recommended for preserving anatomical specimens—might be prepared by mixing:

Boroglyceride	2 parts
Chloride of zinc	2 to 5 "
Water	50 "

Similarly, if the chloride of zinc be replaced by chloride of sodium, the result will be likewise a good preserving agent.

No. 1,138.—**Absorbent Cotton** (J. W. K.).

This may be prepared in several ways.

The following formula is based upon that published by F. L. Slocum in the *American Journ. of Pharm.*, Feb., 1881:

Cotton, free from obvious foreign impurities.	10 parts
Solution of soda	300 "
Chlorinated lime	8 "
Hydrochloric acid,	
Water, each	a sufficient quant.

Boil the cotton with 150 parts of solution of soda for half an hour. Then remove it, wash it thoroughly with water, and press out the excess of the latter. Agitate the chlorinated lime with 150 parts of water and, having strained the mixture, immerse the cotton in the strained liquid for twenty minutes. Then wash it again with water, dip it for a short time in water acidulated with sufficient hydrochloric acid to preserve an acid reaction, again wash it with water, and boil it once more with 150 parts of solution of soda. Wash it, dip it again in acidulated water and then wash it with water until the washings cease to be clouded by nitrate of silver. Finally, press out the excess of water, dry the cotton quickly, and afterwards pick it or card it into loose masses.

Another method is, to exhaust cotton, packed moderately tight in a suitable apparatus, with benzin. This may be done by means of a continuous extraction apparatus, and the benzin finally remaining in the cotton may be driven out and almost wholly recovered. The benzin used should be as free as possible from disagreeable odor, and the cotton must be properly aired to get out the last traces of the odor.

No. 1,139.—**How to keep Phosphorus** (D. G.).

Phosphorus should be kept in a place where no damage can result in case the water, in which it is packed, should leak out and the air obtain free access to it. This is the general rule; its practical application may vary with the circumstances. The governments on the continent of Europe usually prescribe that it must be kept in the cellar, in a locked closet. It is often kept in strong vials, filled with water, which are stoppered with a good cork; and the vial is placed inside of a tin-box provided with a well-fitting lid.

Phosphorus is usually put up and sold in tightly soldered tin-cans filled with water. In our experience, these cans often begin to rust on the outside, and it will happen, occasionally, that the rusting process will penetrate through the tin, causing the water to leak out, and producing a more or less slow, though sometimes quite rapid combustion of the phosphorus. This has sometimes happened when no person was present in the warehouse or store-room, and has been the cause of several fires. The accident may be prevented by carefully *painting* the tin-cans, as soon as received, with several layers of white paint, so as not to leave the last portion of tin exposed. Should a large stock have to be carried, it is advisable to paint the cans freshly at least once a year. We have been in the habit of using this precaution for many years, having previously very nearly made a very unfortunate experience wish unpainted cans.

No. 1,140.— **Cologne Yellow** (Fulton).

We are not quite sure whether this name is familiar to American manufacturers of colors; at all events, it is merely an English translation of the German "Kölner Gelb," which name is given to a diluted mixture of chrome-yellow (chromate of lead) originally made at Cologne. It is a composition of

Gypsum (calcium sulphate)	60 parts.
Chromate of lead	25 "
Sulphate of lead	15 "

No. 1,141.—**Eau d'Ange** ("Sundries").

This name is applied to a scented water which is prepared by distilling the leaves of the common myrtle (*Myrtus communis* L.) with water. It is prepared and sold in France in considerable quantities. Sometimes it is imitated by means of a mixture made from:

Extract of vanilla (½ lb. to gall.)	4 fl. oz.
" " rose	8 "
" " orange flower	4 "
" " tuberose	4 "
" " jasmine	1 "

No 1,142.—**Vesicating Plants** (Dr. A. S. K.).

There are quite a number of plants which contain an acrid juice capable of producing local inflammation or even blisters. Among those which have been regularly used for

such a purpose, we may mention the *Blistering Ammannia*, indigenous in Sind, the Punjaub, Kutch, Afghanistan, and the Bengal and Bombay Presidencies. It is the *Ammannia vesicatoria* of Roxburgh, nat. fam. Lythraceæ: a herbaceous glabrous annual, having an erect stem, rising six to twenty inches high; with opposite, sessile, lanceolar, smooth leaves; lower branches opposite, upper ones alternate; flowers axillary, in cymes (see Roxb. Flora Ind., ii., 258).

The plant has a strong "muriatic," but not disagreeable, smell. The leaves are highly acrid, and are universally used by the natives as a vesicant in rheumatic pain, fevers, etc., and though it performs its office effectually, it is not recommended, owing to the length of time required (generally from thirty to forty minutes) to raise a blister, and the pain caused, which is more intense than by cantharides. *Plumbago rosea L.*, another East Indian plant, is reputed to be much more rapid and certain in its effects than the former, though also inferior to cantharides. The pain caused by it, however, is reported to be quite severe. The root or root-bark is the part generally used.

Even the European Plumbago (*Plumbago europæa* L., Tooth-wort) has a caustic action.

The great pain caused by most of these acrid plants, and their comparatively slow and uncertain action, will probably form permanent obstacles to their regular use in medicine.

No. 1,143.—On the Estimation of Silver.

EDITOR OF NEW REMEDIES.

In making some wet assays of different ores, I discovered a method of a quantitative determination of silver in presence of lead, which I have not found noticed in any of the analytical works at my command. It depends on the peculiar property of sodium chloride of precipitating only the silver in a mixed (acid) solution of silver and lead. As the silver chloride separates readily, upon an occasional shaking and leaves the liquid quite clear, there is no difficulty in determining the quantity of silver volumetrically. The lead can afterwards be precipitated with sulphuric acid, then dried and weighed.

(Extract from a subsequent letter:)

Since writing to you, I have tried Volhard's method of estimating silver volumetrically by sulphocyanide of potassium—using ferric nitrate as an indicator. It works elegantly, and, what is more valuable *for my purpose*, is the fact that the presence of lead does not interfere—the affinity of the sulphocyanogen for iron being greater than for lead, but less than for silver. It is easy to make the titration very exact. I find Volhard's method much better than Mohr's, where the change of color depends on silver chromate, which is difficult to distinguish in a quantity of white chloride.

There is another silver reaction I have stumbled on which is not down in the books, at least as far as I have seen. It is as follows:

$2HgCl_2$	+	Ag_2	=	Hg_2Cl_2	+	AgCl
mercuric chloride		silver		mercurous chloride		silver chloride

The experiment may be made by preparing a solution of mercuric chloride in water, and adding some metallic silver, such as has been reduced from the chloride by means of zinc. The mixture is frequently shaken in the course of a few hours, and then set aside, when the mercury will all be precipitated. If an equivalent proportion of silver be taken, the precipitate will be white (pure calomel); but it will then take longer to complete the reaction.

ST. LOUIS, MO. H. E. HOELKE.

No. 1,144.—Determinatiou of pure, crystallizable Sugar in a Sample of Commercial Sugar (Ed. W. M.).

There are several methods in use for accomplishing this. Among those on which most reliance is placed is Payen's method, modificed by Scheibler, which is as follows (see *Allen, Comm. Org. Anal.*, II., 320):

Three strengths of alcohol having specific gravities respectively of 0.8488 (No. 1), 0.8265 (No. 2), and 0.8118 (No. 3), are first carefully prepared and No. 1 is mixed with 5 per cent, by measure, of ordinary acetic acid.

All three of these liquids are completely saturated with cane sugar by keeping them in bottles filled with lumps of the best white sugar free from powder. Twenty grams of the sample are weighed out, and placed in a Mohr's burette having a plug of cotton or glass-wool at the lower end.

The orifice is provided with a compression clamp or glass tap, which is connected by india-rubber tubing with a flask, in which a partial vacuum can be obtained by a Bunsen pump or other means. A tube filled with pumice, moistened with sulphuric acid, is attached by a cork to the upper part of the burette, and a current of warm air drawn through the apparatus for some time to remove as much of the water as possible (this part of the process may be omitted if the original sample be tolerably dry). The drying tube is next removed, and the burette filled with the sugar saturated alcohol No. 1 (sp. gravity before saturation 0.8488). This is allowed to percolate slowly through the sugar till it runs into the flask colorless, or nearly so.

The liquid is then just sucked out, and the residual sugar rinsed successively with No. 2, No. 3, and finally with absolute alcohol.

The drying tube is again attached, and warm air sucked through the apparatus till the sugar is thoroughly dried, when it is removed and weighed, or it may be washed out (without being dried) with water, the solution made up to 100 *cc.*, clarified and polarized. It is very desirable to inclose the burette in a cylindrical lamp glass or similar contrivance by which it can be surrounded with water, which can be kept at 60° C. during the preliminary and final dryings in a current of air, while by filling the cylinder with water at 60° F. (=15.5° C.) a constant temperature is readily maintained during the treatment with alcohol. The results yielded by this process are very constant and reliable if care be taken to conduct the operation at the temperature at which the alcohols were saturated, and if the sugar be well air-dried before being washed. Although yielding good results with cane sugars and superior beet sugars, the results obtained with low beets (second and third runnings) are somewhat fallacious.*

The method assumes that all the sugar in solution in the adhering molasses will pass into the final residue of molasses. The foregoing method of assaying raw sugar has been recently criticised by Casamajor,† who, without seriously invalidating the results obtained by it, has suggested the following mode of estimating crystallized sugar.—"Methyl alcohol"—by which it is presumed the author of the process means commercial wood spirit of 0.8533 sp. gravity at 60° F. (= 15.5° C.) is saturated with cane sugar in the same manner as Payen's solutions. By this treatment it increases to 0.8710 sp. gravity. If not strictly of this density, it must be made so by appropriate addition of water or wood-spirit, allowing time for the difference in the amount of sugar to become precipitated or dissolved. 19.8 grams of the sample are then triturated in a mortar with exactly 50 *cc.* of the above solution; and when all lumps and crystals are broken up, and the action is supposed complete, the liquid is passed through a dry filter, and the density carefully taken by a hydrometer or specific gravity bottle. From the specific gravity thus found (reduced if necessary to 60° F.) the corresponding percentage of alcohol by volume is ascertained and to this figure is added 22.9‡ the sum of the two being the percentage of crystallized sugar in the sample. If the trituration of the sugar with the spirit has to be conducted at a temperature in excess of 15.5° C. (= 60° F.), 0.1 grams less of the sugar should be taken for the increase of 5° C. Thus, if the temperature of the laboratory be 25.5° C., the standard weight of the sample should be 19.8 grams instead of 19.6.

* The process has been recently investigated by Wichelhaus Eissfeld, and Stammer, who, from numerous experiments on various kinds of raw sugar, found the method gave fairly constant and accurate results, the largest variation being 1⅓ per cent.—*Bied. Centr.*, 1879, p. 542.

† *Chem. News*, xl., 74, 97, 107, 131, vol. ii.

‡ This figure is the difference between 100.0 and the percentage of alcohol by volume, corresponding to the specific gravity of the standard solution.

BIBLIOGRAPHY.

ELIXIRS. Their History, Formulæ and Methods of Preparation. Including practical processes for making the popular elixirs of the present day, and those which have been officinal in the old pharmacopœias, together with a Resumé of unofficinal elixirs from the days of Paracelsus. By J. U. LLYOD, Professor of Pharmacy in the Cincinnati College of Pharmacy, etc. 8vo. Cincinnati: Robert Clarke & Co., 1883. (Price $1.25.)

PROFESSOR LLOYD is alive to the fact that, in spite of much agitation and argumentation on the part of a certain number of physicians and pharmacists, there is still a continued demand for elixirs. And on the other hand, the great multiplication of formulæ, even for one and the same elixir, has rendered the chance of uniformity in these preparations very feeble. To select from the large mass of literature on the subject that which appeared to be worthy of permanent record, and to enrich it by such observations and processes as his own extensive experience had gathered and elaborated, was the aim of the author, and this aim has been most faithfully carried out. It is to be regretted that he found it impracticable to append to each formula a complete reference to the literature, where each was proposed or commented upon; we are aware that the work would have been swelled thereby to a considerable size, but the compilation would nevertheless have proved of interest.

RECENT FOREIGN PUBLICATIONS.

Meyer (Dr. Lothar) und **Seubert** (Dr. Karl). Die Atomgewichte der Elemente, aus den Originalzahlen neu berechnet. 8vo. Leipzig, 1883.

THE determinations of the atomic weights of the different elements may be arranged in classes, according to the possible limit of error involved in their calculation:

a. Elements, where the possible error cannot exceed 0.05 of the atomic weight of hydrogen: Na, K, Ag, C, N, O, S, Cl, Br, I.

b. Elements, where the possible error does not exceed 0.1 of the atomic weight of H: Li, Rb, Ca, B, Pb, P, V, F, Fe, Pt.

c. Elements, where the possible error does not exceed 0.5 H: Cs, Cu, Be, Sr, Ba, Cd, Hg, Al, Sc, Ga, In, As, Se, Mo, W, Ir, Pt (?).

d. Elements, where the possible error may amount from 0.5 to 1 H: Au, Mg, Zn, Si, Te, Cr, Mn, Co, Ni, Ru, Rh, Pd.

e. The others may have still larger errors affecting them.

The values assigned by the authors to the more important elements differ but slightly from those adopted in the table (page 401) of the new U. S. Pharmacopœia The following differences are, however, worthy of mentioning:

Bismuth, 207.5 (U. S., 210). Calcium, 39.21 (U. S., 40). Manganese, 54.8 (U. S., 54).

Allgemeine Waarenkunde und Rohstofflehre. Bearbeitet von Dr. R. Benedict, etc, etc., Dr. F. H. Haenlein (and many others). 8vo. Berlin. To be published in parts.

Behrens (W.). Hilfsbuch zur Ausführung mikroskopischer Untersuchungen im botanischen Laboratorium. 8vo. Braunschweig. 12*m*.

Bodenhausen (Oscar). Versuche über die Wirkungen des Chinolins am Krankenbett. 8vo. (Inaugural Dissert.)

Buckley (A. B.). Botanical Tables for the use of Students. 12mo. Berlin. 2*m*.

De Candolle (A.). Origine de Plantes cultivées. 8vo. Paris. *fr*. 6.

Cloetta (A.). Grundzüge der Arzneiverordnungslehre. 8vo. Freiburg. *m*. 2.50.

Dujardin-Beaumetz. Dictionnaire de thérapeutique de matière médicale, de pharmacologie et des eaux minérales. (To form two vols., 4to, with 1,528 illustr.) To be published in 15 numbers, each at 5 *f*.
(4 numbers are out.)

Elsner (F.). Grundriss der pharmaceutischen Chemie. 3te Aufl. 8vo. Berlin. 6*m*.

Erlenmeyer (A.) Die Morphiumsucht und ihre Behandlung. 8vo. Neuwied. 2*m*.

Fenton (H. J. H.). Notes on Qualitative Analysis. 4to. London. 7*sh*. 6*d*.

Figuier (L.). The Vegetable World: being a history of plants, with their structures and peculiar properties. Illustrated. (New edition.) 8vo. Berlin and London.

Fischer (E.). Das Naphthalin in der Heilkunde und der Landwirthschaft. 8vo. Strassburg. 1.50*m*.

Harperath (Dr. L.) Die Blutlaugensalzfabrikation, Beiträge zur Theorie und Praxis derselben. 8vo. Cöln.

Hartig (Dr. Robert). Lehrbuch der Baumkrankheiten. (Illustrated.) 8vo. Berlin. 12*m*.

Hoffer (R.). Practical Treatise on Caoutchouc and Gutta-percha. 12mo. London. 12*sh*. 6*d*.

Hofmann (C.). Specialitäten der Kunstwein- und Liqueur-Fabrikation. 8vo. Berlin. 10*m*.

Kolbe (H.). Ausführliches Lehr- und Handbuch der Organischen Chemie. (Zugl. 3–5 Band zu Graham-Otto's Lehrbuch d. Chemie.) 2te Aufl. Von E. Von Meyer. Vol. 2, pt. 2. 8vo. Braunschweig. *m*. 7.20.

Luerssen (Dr. Ch.). Die Pflanzen der Pharmacopœa Germanica botanisch erläutert. 8vo. Leipzig. (In numbers.) Number 1. 1*m*.
(A most excellent work.—ED. N. R.)

Lunge (Dr. G.). Taschenbuch für die Soda, Pottasche und Ammoniak Fabrikation. 8vo. Berlin.

Marchand (Léon). Botanique Cryptogamique pharmaco-médicale. 8vo. Paris. Vol. i., pp. 500 (with 120 illustrations). 12*fr*.

McAlpine. The Botanical Atlas. Fol. London. Vol. i. 15*sh*.

Medicus (Dr. Ludwig). Kurze Anleitung zur Maassanalyse. 8vo, Tübingen, 1883.

Millspaugh (Ch. F.). American Medicinal Plants. An illustrated guide to the American plants used as homœopathic remedies. (Finely illustrated.) 4to. New York (Boericke & Tafel). One number was issued as a specimen several months ago. The regular issue of the work will begin about December.

Oudemans (C. A. J. A.). Handleiding tot de Pharmacognosie van het Planten- en Dierenrijk. (2d ed.). Pp. 665, and 5 maps. *flor*. 6.50.

Pharmacopœa Nosocomii Civitatis Havniensis [Pharmacopœia of the City Hospital of Copenhagen]. Editors: C. Nebelong and O. Secher. 4th ed. $0.75.

Pritzel (Dr. G.) und **Jessen** (Dr. E. F. W.). Die Deutschen Volksnamen der Pflanzen. 8vo. Hanover. *m*. 9.50.

Raspe (F.). Heilquellen-Analyse für normale Verhältnisse und zur Mineralwasserfabrikation, berechnet auf 10,000 Theile. 4to. Dresden. (In numbers.) each 1*m*.

Rieth (R.). Volumetrische Analyse. 8vo. Hamburg. *m*. 2.50.

Schrotter (Hugo). Beiträge zur Kenntniss des Camphors und seiner Derivate. 8vo. (Inaugural Dissert.)

Zopf (W.). Die Spaltpilze. 8vo. Breslau. 3*m*.

Crystallized Liqueurs may be prepared, according to the *Ackerman Illust. Gew. Zeit.*, as follows:

Dissolve the ingredients (essences, flavors, coloring matter, etc.), requisite for the "liqueur" in question, in alcohol of 40 per cent, warm the liquid slightly, and add to it crystallized sugar as long as it will dissolve it. Then add a little more alcohol of 10 per cent, and fill it in bottles, which must be well closed and embedded to half their diameter (while lying on their side) in wet sand in the cellar. From time to time the bottles are turned, so as to bring the previously exposed portion in contact with the wet sand. The sugar gradually separates in crystals, and the latter finally fill the bottle uniformly. If the mass is uneven, it may be melted by a gentle heat and recrystallized.

NEW PATENTS.

Complete specifications and illustrations may be obtained of any one or more of the following patents by sending the number, title, name of patentee, with twenty-five cents fo each copy, to the Commissioner of Patents, at Washington, D. C., together with the name and address of the person requesting the same.]

276,551. *Art of Extracting Glycerin from the Waste Soap-Liquor of Soap Manufactories.*—Jesse P. Battershall, New York, N. Y.

276,652. *Fluid Measures.*—Max Wolf, Brooklyn, N. Y. A glass or pottery-ware measure for liquids having a measuring device consisting of a recess in the side thereof, with aperture at top or bottom into the vessel, covered with a glass scale.

276,693. *Weighing Scale.*—Friedrich Huebner, Milwaukee, Wis. [A scale of the pendulum pattern.]

276,796. *Preparation of Oxyhydro-methyl Chinoline.*—Otto Fischer, Munich, assignor to Farbwerke, vormals Meister, Lucius & Brüning, Höchst-on-the-Main, Germany.

276,804. *Corkscrew.*—Monroe Green, Brooklyn, N. Y.

276,822. *Bottle-Stopper.*—Frank F. Jewett, Oberlin, O. Consists of the body *a*, the hood or shield *b*, having the pendant flange *e*, and the flat head *d* constructed in one piece.

276,835.—*Medicinal Compound.*—Evan N. Lawrence, Social Circle, Ga. To be used in diseases of the stomach and bowels, consisting of alcohol, senna, may-apple, seneca, snake-root, columbo, ginger, gentian, white-ash bark, and soft water.

276,888. *Manufacture of Cinnamic Acid.*—Christian Rudolph, Höchst-on-the-Main, Germany, assignor to Farbwerke, vormals Meister, Lucies & Brüning, same place.

276,968. *Inhaler.*—Charles Hilbert, Sing Sing, N. Y., assignor to himself, John J. Mahaney, and Joseph Stern, same place [see p. 205 of NEW REM. for July].

276,981, *Method of and Apparatus for the Manufacture of Oil from Resinous Wood.*—Leopold Pradon, Paris, France, assignor to Mardochée Lambert, same place.

276,990. *Manufacture of Bicarbonate of Soda.*—Eustace Carey Holbrook Gaskell, Jr., and Ferdinand Hurter, Widnes, County of Lancaster England.

277,012. *Device for Cleaning Vacuum Pans.*—Geo. Dinkel, Jersey City, N. J.

277,016. *Apparatus for Treating Argols in the Manufacture of Cream of Tartar.*—Achille Dreyfus, New York, N. Y.

277,042. *Speculum and Vaginal Irrigator.*—Geo. W. Lutz, Indianapolis, Indiana.

277,165. *Hair Tonic.*—Jane A. Shattuck, Utica, N. Y. Consists of bay-rum, glycerin, petroleum, borax, and oil of bergamot.

277,213. *Ointment Injector.*—Alexander W. Brinkerhoff, Upper Sandusky, O. Consists of the graduated tube *A* open at its front end, and provided with a cap at its rear end, the piston *B*, and the encircling rubber gauge-ring *C*.

277,221, *Cosmetic Wash.*—Bernard Edward Buse, St. Louis, Mo. Consists of water, water of ammonia, powdered borax, rose water, essence of Bergamot, sulphate of zinc, and aniline.

277,280. *Vacuum Pan.*—Wm. A. Hoeveler, Pittsburg, Pa.

277,331. *Manufacture of Oil as a Substitute for Linseed Oil.*— Peter Gerion Oster, Cologne-on-the-Rhine, Prussia, Germany. Consists of thick oil, petroleum, cottonseed-oil, Burgundy pitch, a siccative, and litharge.

277,424. *Stem-Pessary.*—Geo. W. Lutz, Indianapolis, Ind.

277,442. *Corkscrew.*—William Bennit, Troy, N. Y., assignor of one-half to Henry U. Knickerbocker, same place.

277,506. *Process of and Apparatus for the Manufacture of Turpentine.*—Henry M. Pierce, Chicago, Ill.

277,568. *Syringe.* Obadiah Hendrick, Macon, Miss.

277,575. *Production of Glycerin from the Mother Liquor of Soap Factories.*—Johann K. Keisler, Milwaukee, Wis., assignor of one-half to Frank Siller, same place.

10,327 (renewal of 272,484). *Bottle-Washing Machine.*—Frank B. Seiberlich, East Cambridge, Mass.

277,900. *Powder Duster.*—Henry B. Hayes, New York, N. Y. The combination of a receptacle for the powder, a pump for forcing air, an air-pipe extending from the pump into the lower part of the receptacle, a valve arranged at the lower end of said pipe for precluding the powder from being drawn into the pump, and a delivery-pipe extending into the upper part of the receptacle only, and having a suitable nozzle or distributing end.

277,924. *Medicine Spoon and Vial Holder.*—Sophia Pelkey, Eau Claire, Wis. The casing *A*, for receiving a medicine vial of corresponding size, open alongside, and provided with a graduated scale, having a bracket *f* on one end and provided with a perforated drop-spoon *E*, the same having a spring-handle *l* and support *g*.

278,115. *Apparatus for the Manufacture of Ammonia.*—Alfred Feldmann, Bremen, Germany.

278,150. *Vacuum Pan.*—Jno. Kelly, Luling, La.

278,161. *Rack for Graduated Glass Measures, etc.*—Frank L. McKee, Plymouth, Pa.

278,269. *Fountain.*—Alvin D. Puffer, Medford, Mass.

278,284. *Druggist's Percolator.*—Edward L. Slocum, Lancaster, O. *Claim.*—A cylinder L having a headed rod H partially screw-threaded and eccentric therewith, two movable diaphragms F G, the latter resting on a boss I, adjustable on the rod, and the former on the substance confined between them, and a threaded cap E on the cover, in combination with a vessel A, pipe C, nipple D, the former having a cock B, funnel K, and vessel M.

278,294. *Fly Paper.*—Otto Thum, Grand Rapids, Mich.

278,380. *Thermometer.*—Henry Weinhagen, Hoboken, N. J.

278,388. *Means for Drawing Corks from Bottles.*—Joachim E Berlein, Altona, Prussia, Germany. *Claim.*—The combination, with a corked bottle or other corked vessel, of the strap or band B, passing across the cork and between it and the mouth of the bottle, and having its end portions projecting beyond the mouth, and a label or seal D applied to the exterior of the bottle or vessel, and securing the end portions of the strap or band thereto.

278,456. *Machine for Coating Pills with Gelatin.*—George W. Platt, Greenfield, Mass.

278,575. *Pestle-Handle.*—George Maris, New York, N. Y. In pestles, the body *A*, having a thread around the wall of a central hole, in combination with a hollow hard-rubber handle *B*, having an externally threaded projection adapted to fit said hole.

278,661. *Device for Bottling Liquids.*—William T. Ferre, Springfield, Mass., assignor to himself and Edwin W. Bennett, same place.

278,780. *Confectionery and Pill-coating and Pill-rounding Machine.*—Thomas Daniels, Toledo, Ohio.

278,816. *Method of Producing Golden Sulphuret of Antimony.*—Charles E. Parsons, Medford, Mass., assignor to the Brunswick Antimony Company, New Brunswick, Canada.

278,823.—*Manufacture of Ammonia and its Salts.* James Pellatt Rickman and Jacob Bayrus Thompson, New Cross, County of Kent, England.

278,849. *Apparatus for Determining the Scale of Glass Measuring Vessels.*—Richard M. Atwater, Millville, N. J., assignor of one-half to Whitall, Tatum & Co., Philadelphia, Pa.

278,845. *Extracting Glycerin.*—Edmund O. Baujard, Aubervilliers, France, assignor to John W. Mackary, Virginia City, Nevada.

279,091. *Apparatus for Administering Medicated Vapors.*—Max Goldberg, Milwaukee, Wis., assignor of one-half to William S. Cooper, Philadelphia, Pa.

279,145. *Apparatus for Manufacturing Bicarbonate of Soda.*—Joseph Gandolpho, New York, N. Y.

279,166. *Veterinary Medicine.* William Huffman, Salt City, Kan. Composed of aloes, powdered nitre, rosin, powdered Castile soap, ginger, oil of cloves, and fluid extract of hydrangea.

279,195. *Deodorizing Perspiration Powder.*—Abby D. Slocomb and Jennie W. Day, New Orleans, La. Consists of bicarbonate of soda, corn-starch, and rice-flour, with the addition of perfume.

279,200. *Respirator.*—Helen A. Stewart, Concord, N. H.

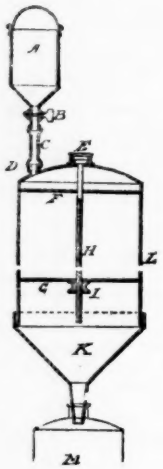
279,202 and 279,203. *Cork Screws.*—Thomas M. Strait, Troy, N. Y.

279,915. *Alcohol Lamp.*—Norman Clark, Sterling, Ill. The lamp *A*, provided with faces or facets on its sides inclined from the perpendicular at about the angles shown, and of such size and such location as to furnish, respectively, temporary bases for such lamp.

279,935. *Nursing Bottle.*—Morris Glattsteine, New York, N. Y. A nursing bottle composed of elastic material, and with a removable glazed pannel in one side.

279,989. *Funnel and Strainer.*—Emil Steinhorst, Utica, N. Y.

280,038. *Clinical Thermometer.*—James J. Hicks, Hatton Garden, County of Middlesex. A thermometer-tube having the corrections of the examining office marked thereon, in addition to the ordinary scale-readings.



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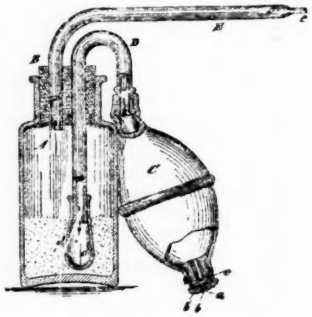

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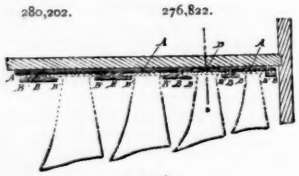

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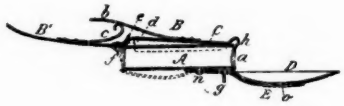

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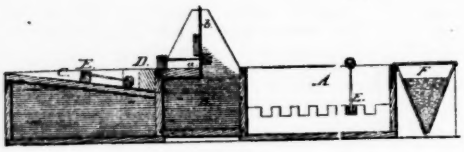

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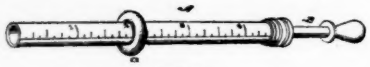

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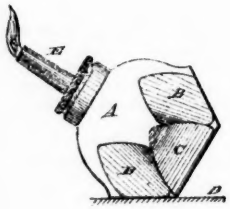

279,915.

279,216. *Means for Attaching Cork Screws to Bottles.*—Joachim E. Berlien, Altona, Germany.

279,265. *Inhaler.*—Laird W. Nevins, Toledo, Ohio.

279,431. *Manufacture of bichromate of soda.*—Edmund P. Potter and William H. Higgin, Bolton, County of Lancaster, England.

279,766. *Bottle-filling Machine.*—Edwin J. Lloyd, Philadelphia, Pa., assignor of one-half to Charles C. Joly, same place.

279,813. *Corking Machine.*—Frederic George Riley, London, England.

279,860. *Manufacture of Linseed-Oil.*—Henry A. Davidson, Buffalo, N. Y.

279,913 *Lozenge Machine.*—Oliver R. Chase, Boston, Mass.

280,040. *Inhaling Air-Chamber for Dental and Surgical Operations.*—Edwin P. Howland, Washington, D. C.

280,088, 280,089, and 280,090. *Manufacture of Sulphate of Alumina.*—Conrad Semper, Philadelphia, Pa., assignor to Harrison Brothers & Co., same place.

280,202. *Medical-Powder Injector.*—Morris Mattson, New York, N. Y. In a powder-projector, the combination of the reservoir *A*, the removable outlet-tube *B*, the elastic bulb having an air-inlet *E*, the headed tube *H*, which serves to connect the bulb to the reservoir, and the tube *J*, having the slit *K* in its side.

280,234. *Bottle-filling Machine.*—William Pearson, Carson City, Nev., assignor to John McF. Pearson, Placerville, Cal.

280,281. *Medicine for Scrofula.*—Callahill Atkins,

Pikeville, assignor of one-half to Stephen M. Ferguson, Floyd Co., Ky. Composed of a syrup containing tincture of the following ingredients, namely, black-pine buds (*Germina Pinus nigra*), tulip-tree bark (*Cortex Liriodendron*), sarsaparilla (*Sarsaparilla*), wild comfrey root (*Radix Symphiti officinalis*), golden seal (*Hydrastis canadensis*),) wild silk-weed (*Asclepias syriaca*), magnolia bark (*Cortex Magnoliæ*), and dandelion root (*Radix Taraxaci, dens leonis.*)

Liquid Carbonic Acid for the Mineral Water Trade.

MR. ADOLPH VOMACKA thinks that a new era is dawning for the manufacturers of mineral and soda water since they will no longer be compelled to purchase and keep an expensive apparatus for generating the gas or compressing it. Experiments have shown that equally good products may be obtained by dissolving liquid carbonic acid in water. The advantages, in this case, are that liquid carbonic acid may be obtained commercially quite pure and free from common air, and that the liquid itself on expansion exerts all the pressure required.—*Rundschau, Leitmeritz.*

The Quinine Factory between Bensheim and Auerbach, in the Grand Duchy of Hessen, has been converted into a stock-company. The capital is 350,000 marks, in 70 shares at 5,000 marks each. The company is represented by Dr. Seyferth in Auerbach.

Boric Acid as a Preservative of Meat is said to owe this effect to the fact that it converts the phosphates contained in the meat into acid phosphates. The same thing may be produced by hydrochloric or phosphoric acids, which should, therefore, theoretically, be equally good preservatives. [And so they have also been found in practice, though perhaps not quite to the extent of the theory.]—*Techniker*, 14, 215.

To Preserve Fruit fresh for a long time—it is said for years—it may be placed into sand which has previously been carefully washed, dried, and then dampened with cognac. Care must be taken that the fruits, which should not be overripe, nor unripe, do not approach each other too closely. The earthen or wooden vessel in which the sand is contained must be kept well covered in a place which is neither too damp nor too warm.—*Rundschau, Leitmeritz.*

To Detect Aloes in Beer.—H. Bornträger, in the *Zeit. f. Anal. Chem.*, proposes a method of detection. Add to the suspected beer a double volume of benzin, shake, let it settle, decant the benzin, and add a few drops of ammonia. If aloes are present a violet-red color will be developed. [Owing to the high price of hops and the alleged fact that other bitter drugs have been largely used in brewing, the above may prove valuable.—ED. N. R.]

Glacialin is the name given to a compound which, according to Besana, consists of:

Boric acid	18 parts
Borax	9 "
Sugar	9 "
Glycerin	6 "

It has been used with success as an antiseptic, and also as a preservative for articles of food.

To Clean Ivory.—Rub it with bicarbonate of sodium, applied by means of a tooth-brush dipped in warm water. —*Chem. and Drug.*

Dissolving Pepsine.—To dissolve pepsine it is often necessary to add some acid or, as Mr. Neynaber showed in October, 1880, some citrate of ammonium. This last is especially adapted for making elixirs which are also to contain citrate of bismuth. But it is well to bear in mind that some European pepsines, Boudault's old style, for instance, are made with starch and not with sugar of milk, like the American. With these an insoluble, but inert, sediment is unavoidable, and is to be filtered out.

ITEMS.

Kansas Pharmaceutical Association.

THE fourth annual meeting of this Association took place Wednesday, June 6th, at Topeka. The meeting was called to order by the President, F. E. Holliday, at 3 o'oclock.

Owing to the continued bad state of the weather, and also to the fact that, according to the new law regulating railroads in this State, no reduction in fares could be obtained, the attendance was much smaller than usual. However, the session was quite interesting, and was one that will prove of much benefit to the Association.

The President reviewed the work of the past year and the efforts that had been made to get the pharmacy bill passed. But the legislature being so crowded with other matters, the proposed pharmacy law could not be attended to at the last session; hopes are entertained that it will be enacted by the next legislature.

On motion, a change was made in the order of business, so as to elect new members before the election of officers.

The new members being elected, the following officers were unanimously elected for the ensuing year:

President, M. L. Stone, Wamego; *Vice-President*, H. W. Spangler, Perry; *2d Vice-President*, Theo. Egersdorff; Leavenworth; *Secretary*, R. H. T. Nesbitt, Leavenworth, *Assistant Secretary*, D. Holmes, Topeka; *Treasurer*, W. A. Stanford, Florence.

Executive Committee, R. J. Brown, George Leis, Geo. Slosson, F. E. Holliday, H. W. Spangler.

The delegates to the American Pharmaceutical Associaciation are M. L. Stone, R. J. Brown, W. A. Stanford, Geo. Slosson, and Geo. Leis.

On motion, this delegation was instructed to represent this Association at the Convention of Retail Druggists, to be held at Washington next September.

A communication, with accompanying resolutions, from the Pennsylvania Pharmaceutical Association were read, and approved.

A communication, accompanied by a petition, to remove the tax on alcohol used exclusively in pharmaceutical preparations and for scientific purposes was received from the Georgia Pharmaceutical Association. In accordance with the request made in the communication, on motion, the president and officers were directed to sign the petition, and send it to Kansas Senators and Representatives in Congress.

EVENING SESSION.

Vice-President Spangler called the meeting to order at 8 o'clock.

The following committees were appointed:

Committee on Pharmacy and Queries, J. T. Moore, R. J. Brown, F. E. Holliday.

Committee on Trade Interest, Geo. Leis, Theo. Egersdorff, Geo. Slosson.

One of the most interesting papers read was by Mr. Spangler, on the relative merits of measures by weight and measures by volume, giving a history of measures and weights from the earliest times to the present; also detailing his own experience, having used parts by weight ever since receiving the new Pharmacopœia, and found it both convenient and satisfactory.

The paper created considerable discussion. It was remarked that since fluid medicines are always administered by measure, *i. e.*, the spoonful, it is much more difficult to estimate the dose of the active ingredients when the preparations that enter the mixture are made with parts by weight, owing to the varying specific gravity of the menstrua.

The merits and demerits of the new Pharmacopœia were pretty well discussd, the prevailing opinion being that it was an improvement, and being a step toward the metric system, was in the right direction.

The Association adjourned, to meet in Leavenworth the second Wednesday in June, 1884.

A most cordial feeling of good-will and interest pervaded

the meetings. The membership is rapidly increasing, already having reached 215.

International Pharmaceutical Exhibition in Vienna.—From reports so far received by private correspondents, the prospects of a numerous participation by European exhibitors are very promising. America will also be represented, but by no means in proportion to its ability, chiefly on account of the late issue of the invitation.

We have received several official circulars from the exhibition committee regarding the progress so far made and giving notice of concessions and facilities obtained from the government for exhibitors. As the publication of these circulars in our journal would have happened at a date subsequent to that set as a limit by the committee, we have chosen another method to bring those facts to the notice of those interested in the subject.

Archduke Karl Ludwig, of Austria (brother of the Emperor Francis Joseph) has accepted the protectorate over the exhibition. The government has appointed Dr. August Vogl, Professor at the University at Vienna, as its representative.

The Exhibit of the United States at the International Exposition at Amsterdam was quite scant at the date of a report made to *The Chemist and Druggist*, of London, during May. Seasbury & Johnson had a good exhibit of plasters, and W. H. Schieffelin a very small case of coated pills. Germany makes a capital display, and nearly everything is in position. Fried. Krupp has a grand trophy of his big guns in the centre transept, and, though there are no drugs, the chemicals are about the only fine ones in the building. Faubel, of Cassel, has some good labels for pharmacists and, judging from his specimens, prints a number for men in New York, Brooklyn, and San Francisco. It seems curious that, with such marvellous inventive powers in printing and engraving in the States, labels should be sent there from this little place.

The Hygienic Exposition at Berlin, which has after all turned out to be a great success, has suffered badly in name at the hands of the bourgeoisie and working classes of Berlin, who insist upon abbreviating the rather awkward word "hygienic" in "hyena."

Department of Pharmacy of the University of Wisconsin.—The regents have established a Department of Pharmacy, to be opened on the 5th of September under the direction of Prof. Frederick B. Power, of the Philadelphia College of Pharmacy. The requirements for admission are a certificate of *two* years' work in practical pharmacy under the direction of a respectable druggist. In lieu of such certificate, the regents will accept a certificate of *one* year's practical work and a satisfactory examination in arithmetic, grammar, English composition, geography (political and physical), and history of the United States. A student without certificate of practical work will be required to pass an examination (for admission) in the branches above-named, and also in natural philosophy and botany (in each to the extent of an ordinary class-book) and in Latin or German to the extent of the work of one year.

The course will embrace the work of two years in the University and the work of two years in practical pharmacy. For particulars, address the President of the University of Wisconsin, at Madison.

The Wisconsin Pharmaceutical Association will meet at La Crosse on the 14th, 15th, and 16th of August, the sessions commencing each day at 10 A.M. and 2 P.M. The Local Secretary, T. H. Spence, will supply all needful information about hotel and railroad accommodations, and exhibitors may consign their goods to him, charges paid, and accompanied with directions as to subsequent disposal. A postal card notice sent to the Local Secretary previous to August 1st will insure provisions for the entertainment of all who may attend. The list of those who intend to contribute to the exhibition is already unusually large, and embraces the names of houses in various parts of the country who have not heretofore taken part in similar exhibitions.

North Carolina Pharmaceutical Association.—The fourth annual meeting of the North Carolina Pharmaceutical Association will be held in the city of Wilmington, commencing Wednesday morning, 8th August, 1883. Druggists wishing to join the Association at this meeting can obtain blanks and full information by addressing the undersigned. Exhibitors desiring space in which to display their goods are requested to communicate with me at once. JAMES C. MUNDS, *Secretary.*

American Pharmaceutical Association.—Delegates are reminded that their credentials should be sent to the Permanent Secretary, Prof. J. M. Maisch, Philadelphia, at least two weeks in advance of the meeting.

Applicants for membership should, if possible, send their applications with the requisite funds to the Chairman of the Committee on Membership, Mr. G. W. Kennedy, Pottsville, Pa., at least two weeks before the meeting.

The Local Secretary, Mr. Charles Becker, West Washington, D. C., will give all information to those who may wish to exhibit suitable goods.

The Committee on Entertainments, Mr. Geo. J. Seabury, New York, Chairman, will soon issue circular with the programme of the entertainments projected for the time when the Association will not be in session.

The interest from the Centennial Fund is now available for scientific investigations, and the committee is prepared to receive applications for grants, accompanied by a statement of the investigation to be made, and of the amount of material required, it being understood that the results of the investigation, together with a full report thereon, be subsequently communicated to the Annual Meeting of the Association.

Applications should be sent, on or before September 1st, addressed to Charles A. Heinitsh, Lancaster, Pa.; Sam'l A. D. Sheppard, Boston, Mass.; or to John M. Maisch, Philadelphia, Pa. After September 1st, such communications should be sent to Washington, in care of the Local Secretary.

PHARM. CALENDAR FOR AUGUST.

N. B.—The officers of Societies, Colleges of Pharmacy, Pharm. Associations, etc., will oblige us by forwarding schedules of their meetings, lists of officers, and any changes that may be desirable.

Date.	Society Meetings.
Wed. 1st.	Indianapolis Assoc. of Pharmacists.—Meet.
Thurs. 2d.	New York Coll. Pharm.—Trustees' Meet.
	Louisville Coll. Pharm.—Pharm. Meet.
	Massachusetts Coll. Pharm.—Trustees' M.
Mon. 6th.	Erie Co. Pharm. Asso.—Annual Meeting at Buffalo.
Tues. 7th.	Philadelphia Coll. Pharm —Trustees' Meet.
	Maryland Coll. Pharm.—Trustees' Meet.
	St. Joseph (Mo.) Pharm. Assoc.—M.
Wed. 8th.	Cincinnati Coll. Pharm.—Trust. Meet
	North Carolina Pharm. Assoc.—Meets at Wilmington.
Thurs. 9th.	Newark Pharm. Asso.—Meeting.
	Louisville Coll. Pharm.—Directors' Meet.
	Philadelphia Coll. Pharm.—Alumni Pharm. Meet.
	New York German Apoth. Soc.—Meeting.
	Lancaster Co. Pharm. Assoc.—Meeting.
Tues. 14th.	Wisconsin State Pharm. Assoc.—Meets at La Crosse.
	Pittsburg Coll. Pharm.—Trust. Meet.
	Chicago Coll. Pharm.—Trust. Meet.
	Kings Co. Pharm. Soc.—Meets in B'klyn.
	National Coll. Pharm.—Meet.
Tues. 21st.	St. Louis Coll. Pharm.—Trust. and Al. M.
	St. Joseph (Missouri) Pharm. Assoc.—Meet.
Tues. 28th.	Boston Druggists' Assoc.—Meet.
Thurs. 30th.	Kings Co. Board of Pharm.—Meet.